

# VIRGINIA WESTERN COMMUNITY COLLEGE

## GENERAL CATALOG 1995-96

### Accreditation

Virginia Western Community College is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award associate degrees, diplomas, and certificates.

Association of Collegiate Business Schools and Programs

The National League for Nursing

The State Board of Nursing

The Joint Review Committee on Education in Radiologic Technology

The American Dental Association Commission on Dental Accreditation

The Technology Accreditation Commission of the Accreditation Board for Engineering and Technology

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The statements and provisions in this catalog and in the Student Handbook are not to be regarded as an irrevocable contract between the student and the College. The College reserves the right to change, when warranted, any of the provisions, schedules, calendars, programs, courses, or fees, as might be required.

Supplements may be issued to this catalog as necessary by the College.

It is the policy of the Virginia Community College System and Virginia Western Community College to maintain and promote equal employment and educational opportunities without regard to race, color, sex, age, religion, disability, national origin, or other non-merit factors. For further information, contact the Title IX Coordinator in Fishburn Hall, Room 030, 857-6067 or the Section 504 Coordinator, Fishburn Hall, Room 018, 857-7240. TDD number is 703-857-7918.

VIRGINIA COMMUNITY COLLEGE SYSTEM

# Academic Calendar for 1995-96

## 1995

### Summer Term 1995

**MAY**

S	M	T	W	T	F	S
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**JUNE**

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**JULY**

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**AUGUST**

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**SEPTEMBER**

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**OCTOBER**

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**NOVEMBER**

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**DECEMBER**

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#### 11-Week Session

First Day of Classes.....	May 16
Last Day to Register/Add a Class.....	May 22
Last Day to Drop and Receive a Refund.....	May 26
Last Day to Apply for Graduation.....	June 9
Mid-Term Break.....	June 20-23
Independence Day Holidays.....	July 3-4
Last Day to Withdraw Without Grade Penalty.....	June 30
Last Day of Classes.....	August 8

#### 10-Week Session

First Day of Classes.....	May 16
Last Day to Register/Add a Class.....	May 22
Last Day to Drop and Receive a Refund.....	May 25
Last Day to Apply for Graduation This Term.....	June 9
Mid-Term Break.....	June 20-23
Last Day to Withdraw Without Grade Penalty.....	June 26
Independence Day Holidays.....	July 3-4
Last Day of Classes.....	August 1

#### First 5-Week Session

First Day of Classes.....	May 16
Last Day to Register/Add a Class.....	May 17
Last Day to Drop and Receive a Refund.....	May 19
Last Day to Withdraw Without Grade Penalty.....	June 5
Last Day to Apply for Graduation.....	June 9
Last Day of Classes.....	June 19

#### Second 5-Week Session

First Day of Classes.....	June 26
Last Day to Register/Add a Class.....	June 27
Last Day to Drop and Receive a Refund.....	June 30
Last Day to Withdraw Without Grade Penalty.....	July 14
Last Day of Classes.....	August 1

#### FALL SEMESTER 1995

##### 16-Week Session

First Day of Classes.....	August 21
Last Day to Register/Add a Class*.....	August 25*
Last Day to Drop and Receive Refund.....	September 1
Labor Day Holiday.....	September 4
Last Day to Apply for Fall Graduation.....	October 6
Last Day to Withdraw Without Grade Penalty.....	October 20
Faculty In-Service/Academic Advising**.....	November 21-22**
Thanksgiving Holidays.....	November 23-24
Last Day of Classes.....	December 8
Final Examinations.....	December 11-15

\*Night Classes may register so long as the class has not met twice.

\*\*No day or night classes.

# 1996

**JANUARY**

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**FEBRUARY**

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**MARCH**

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**APRIL**

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**MAY**

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**JUNE**

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**JULY**

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28	29	30	31			

**AUGUST**

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## First 8-Week Session

First Day of Classes .....	August 21
Last Day to Register/Add a Class.....	August 24
Last Day to Withdraw and Receive Refund.....	August 28
Labor Day Holiday.....	September 4
Last Day to Withdraw Without Grade Penalty .....	September 22
Last Day to Apply for Fall Graduation.....	October 6
Last Day of Classes.....	October 16
Final Examinations.....	Last Class Meeting

## Second 8-Week Session

First Day of Classes.....	October 17
Last Day to Register/Add a Class .....	October 20
Last Day to Withdraw and Receive Refund .....	October 24
Last Day to Withdraw Without Grade Penalty.....	November 20
Faculty In-Service Days/Academic Advising** .....	November 21-22**
Thanksgiving Holidays - college closed .....	November 23-24
Last Day of Classes.....	December 8
Final Examinations.....	December 11-15

\*\*No day or night classes.

## SPRING SEMESTER 1996

### 16-Week Session

First Day of Classes.....	January 8
Last Day to Register/Add a Class* .....	January 12*
Last Day to Withdraw and Receive Refund .....	January 19
Last Day to Apply for Spring Graduation.....	February 16
Spring Break** .....	March 4-8**
Last Day to Withdraw Without Grade Penalty .....	March 15
Last Day of Classes.....	April 26
Final Examinations .....	April 29-May 3
Commencement Ceremony .....	May 10

### First 8-Week Session

First Day of Classes.....	January 8
Last Day to Register/Add a Class .....	January 11
Last Day to Withdraw and Receive Refund .....	January 15
Last Day to Withdraw Without Grade Penalty .....	February 9
Last Day to Apply for Spring Graduation.....	February 16
Last Day of Classes.....	March 1
Final Examinations.....	Last Class Meeting

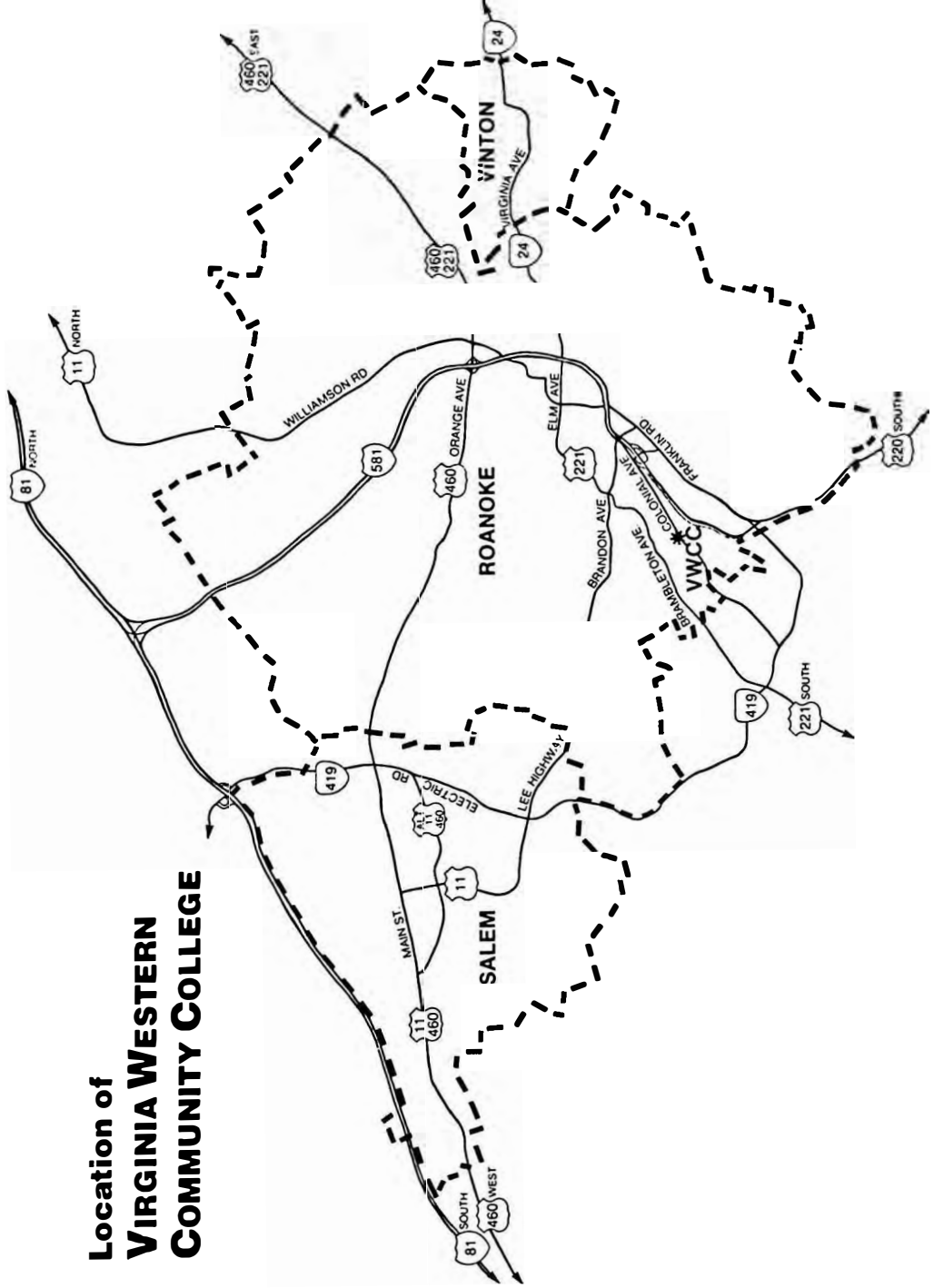
### Second 8-Week Session

Spring Break** .....	March 4-8**
First Day of Classes.....	March 11
Last Day to Register/Add a Class.....	March 14
Last day to Withdraw and Receive Refund.....	March 18
Last Day to Withdraw Without Grade Penalty .....	April 12
Last Day of Classes.....	April 26
Final Examinations .....	April 29-May 3

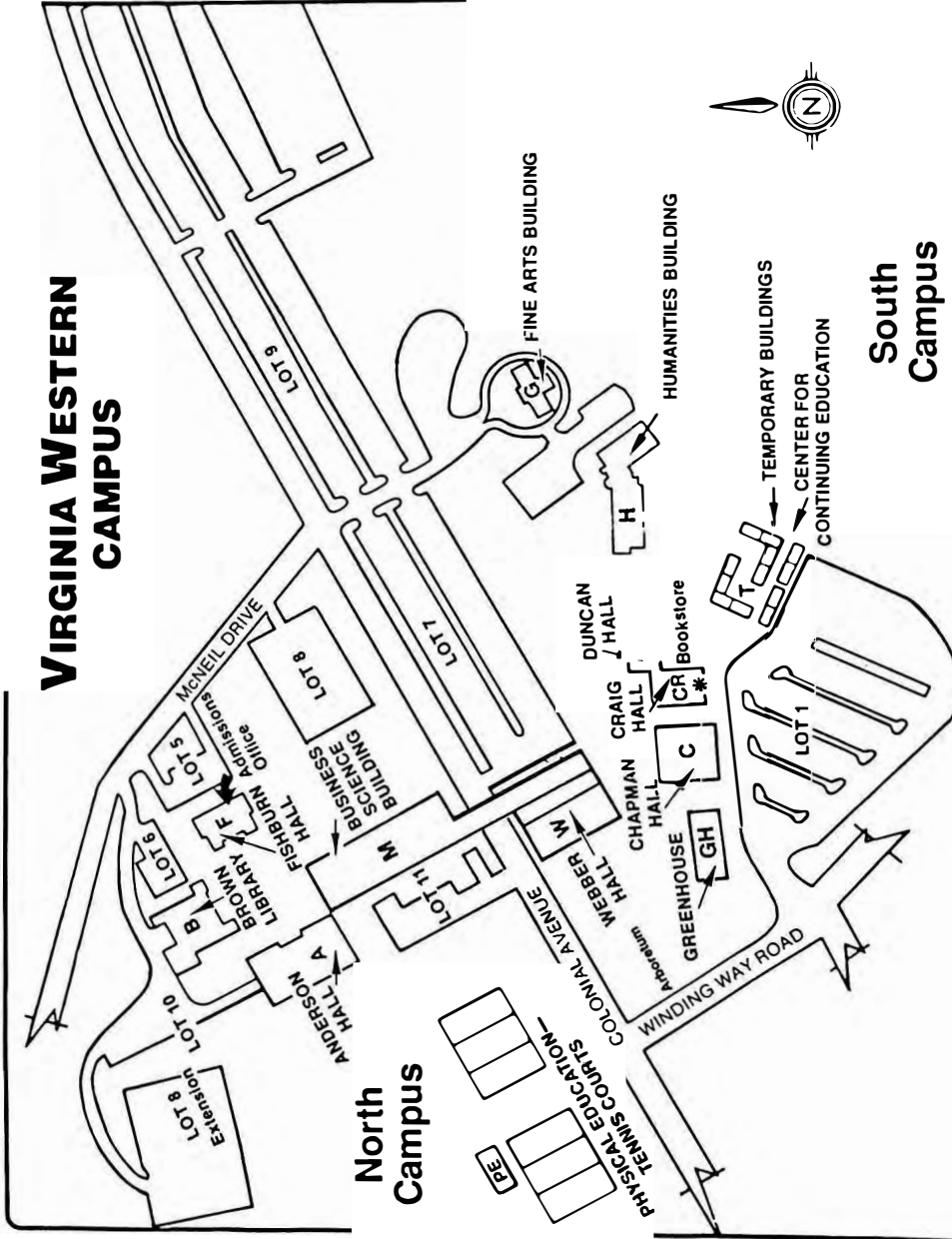
\*Night Classes may register so long as the class has not met twice.

\*\*NOTE: If necessary, Spring Break may be used to make up inclement weather days.

**Location of  
VIRGINIA WESTERN  
COMMUNITY COLLEGE**



# VIRGINIA WESTERN CAMPUS



**BUILDINGS:**

- 06 A ANDERSON HALL
- 08 B BROWN LIBRARY
- 05 C CHAPMAN HALL
- 01 D DUNCAN HALL
- 03 CR CRAIG HALL
- 07 F FISHBURN HALL
- 04 G FINE ARTS BUILDING
- 21 GH GREENHOUSE
- 24 H HUMANITIES BUILDING
- 22 M BUSINESS SCIENCE BUILDING
- 15 PE PHYSICAL EDUCATION
- 14 T TEMPORARY BUILDINGS
- 20 W WEBBER HALL
- \* BOOKSTORE

**PARKING LOTS:**

- 1 STUDENTS & FACULTY
- 5 VISITORS & REGISTRATION
- 6 ASSIGNED
- 7 STUDENTS, FACULTY, & VISITORS
- 8 FACULTY, STAFF, & HANDICAPPED
- 8 (Extension) FACULTY, STAFF, & STUDENTS
- 9 STUDENTS
- 10 FACULTY & STAFF ONLY
- 11 HANDICAPPED & SERVICE

## South Campus

## Contents

<b>I. General Information</b> . . . . .	9
The College . . . . .	9
Mission Statement . . . . .	9
Educational Program Goals . . . . .	9
College Facilities . . . . .	10
Center for Business, Industry and Technology . . . . .	11
<b>II. Admissions Information</b> . . . . .	13
Eligibility . . . . .	13
Application Procedure . . . . .	13
Admissions Policy . . . . .	13
Admission Priorities . . . . .	14
Resident Requirements . . . . .	14
Admission of International Students . . . . .	15
Admission of Senior Citizens . . . . .	15
Students Transferring from Other Colleges . . . . .	15
Advanced Placement and Credit-by-Exam Examination . . . . .	15
Military Credit . . . . .	16
Dual Enrollment for High School Students . . . . .	16
Classification of Students . . . . .	16
Student Permanent Record . . . . .	16
Release of Directory Information . . . . .	17
<b>III. Expenses</b> . . . . .	18
Tuition . . . . .	18
Tuition Refunds . . . . .	18
Fees and Charges . . . . .	18
Books and Materials . . . . .	18
Rules for Bookstore Refunds . . . . .	18
Suspension for Nonpayment . . . . .	18
<b>IV. Student Financial Aid</b> . . . . .	19
How and When to Apply . . . . .	19
Eligibility for Financial Aid . . . . .	19
Types of Financial Aid . . . . .	19
Veterans Affairs . . . . .	21
<b>V. Academic Support Services</b> . . . . .	22
Counseling Services . . . . .	22
Career Services/Job Referral . . . . .	22
Student Support Services Program . . . . .	22
Services for Persons with Disabilities . . . . .	22
Student Activities Program . . . . .	22
Off-campus Housing . . . . .	23
Student Health Services . . . . .	23
Library . . . . .	23
Learning Center . . . . .	23
Channels of Communication for Academic Complaints, Suggestions, Appeals, and Grievances . . . . .	24
Policies and Procedures Relating to Sexual Misconduct . . . . .	24
Policy on Substance Abuse . . . . .	25
Policy on Firearms . . . . .	25
Parking on Campus . . . . .	25
<b>VI. Academic Regulations</b> . . . . .	27
Credits and Academic Load . . . . .	27
Grading System . . . . .	27
Grade Point Average . . . . .	28
Repeating a Course . . . . .	28
Attendance . . . . .	28
Final Examinations . . . . .	28
Grade Reports . . . . .	28
High School Transcripts . . . . .	28
Transcripts from Other Colleges . . . . .	29
Academic Honors . . . . .	29
Honor Society . . . . .	29
Academic Standing . . . . .	29
Suspension for Lack of Progress . . . . .	30
Academic Advising . . . . .	30
College year for Graduation . . . . .	30
<b>VII. Programs of Study and Graduation Requirements</b> . . . . .	31
Degrees and Certificates . . . . .	31
List of Programs . . . . .	31
Graduation Requirements . . . . .	32
Participation in Commencement . . . . .	32
Outcomes Assessment Requirement . . . . .	32
General Education . . . . .	33
Computer Literacy . . . . .	33
Program Competencies . . . . .	34
Minimum Requirements for Associate Degree . . . . .	35
Approved List of Transfer Electives . . . . .	36
Programs of Study Accounting . . . . .	37
Administration of Justice . . . . .	38
Air Conditioning and Refrigeration . . . . .	41
Architectural Drafting . . . . .	43
Architectural Technology . . . . .	45
Business Administration . . . . .	46
Business Industrial Supervision . . . . .	48

Child Care	48
Civil Engineering Technology	50
Civil Technology/Surveying	51
Clerical Studies	52
Commercial Art	53
Computer Information Systems	54
Dental Hygiene	56
Early Childhood Development	60
Education	62
Education Secretary	64
Electrical/Electronics	
Engineering Technology	64
Electrical Wiring	67
Electronic Servicing	68
Engineering	69
Environmental Science	
and Technology	71
Firefighting and Prevention	72
Food Service Management	72
General Studies	73
Health Technology	75
Horticulture Technology	76
Floral Design and Indoor	
Plant Care	79
Landscaping and Outdoor	
Plant Care	79
Plant Propagation and	
Production	80
Industrial Technology	81
Legal Assistant	82
Legal Assisting	83
Liberal Arts	84
Liberal Arts: Fine Arts	86
Management	87
Mechanical Engineering	
Technology	92
Medical Transcriptionist	93
Mental Health	94
Microcomputer Studies	97
Nursing	97
Nurse Aide	101
Occupational Safety	102
Office Systems Technology	103
Radio and Television	
Production	106
Radiography	107
Railroad Operations	110
Real Estate	112
Science	113
Computer Science	114
Health Sciences	115
Sign Language	117
Welding	118

Word Processing	119
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## VIII. Description of Courses . . . . .121

### IX. Administration

State and Local Boards	149
Administrative Faculty	150
Faculty	151
Lay Advisory Committees	156





## PART 1

**GENERAL INFORMATION****The College**

Virginia Western Community College is a two-year public institution of higher education operating under a state-wide system of community colleges. The College operates under the policies established by the State Board for Community Colleges and the Virginia Western Community College Board. The College is financed primarily by state funds; however, local governments also provide support.

The service region of the College includes Roanoke, Salem, Roanoke County, Craig County, southern Botetourt County, and northern Franklin County. Day and evening classes are provided on a 70-acre campus located in southwest Roanoke. Classes are also offered at off-campus locations in the area. The College was established in 1966 and has grown from an initial enrollment of 1,352 students to its current enrollment of over 6,500.

**Mission Statement**

Virginia Western Community College is one of 23 colleges that comprise the Virginia Community College System. It derives its charter from the General Assembly of Virginia through the Community College Act of 1966. The College's broad mandate is to prepare students for employment, advanced collegiate education, and active citizenship in the local, national, and global community.

In order to fulfill its mission, the College is dedicated to the belief that all people should have an equal opportunity to develop and expand their skills and knowledge. The College promotes this concept by making higher education available to all who can benefit through its open door admission policy, affordable tuition, and financial assistance. Instruction is offered in a variety of presentation formats both on campus and at convenient locations throughout the College's service area.

The quality educational opportunities presented by the College include associate degree, certificate, career studies, and industrial training programs, as well as developmental studies for those not fully prepared to enter these programs. An

opportunity to gain college-level credit is available to selected high school students. College credits and Continuing Education Units are available to those requiring college courses for promotion and or certain professional certifications. The College provides a diverse schedule of course offerings that supports the self-interest and self-improvement needs of community residents. The needs of senior citizens and nontraditional students are served through special programs.

As part of its overall commitment to quality in higher education, Virginia Western provides a broad range of instructional and student support services. Modern library, computer, and laboratory resources are provided in support of instructional services. A staff of professional counselors is available to help students examine and cope with options in their lives and careers. Extracurricular activities are designed to expand and enrich students' experiences at the College.

The College acquires and maintains the buildings, grounds, and equipment necessary to provide an environment conducive to learning. Since the College recognizes that it is a resource to the community, its services, activities, and facilities may be available to nonstudents when feasible.

**Educational Program Goals**

The educational program goals of Virginia Western are to offer:

1. Associate degree programs to prepare individuals for careers as technical and paraprofessional workers.
2. Associate degree programs to prepare individuals for transfer as upper-division students to baccalaureate degree programs in four-year colleges.
3. Certificate programs, which prepare individuals for careers as technicians, skilled, and semi-skilled workers.
4. Developmental courses, which provide preparation for students who lack the academic background or prerequisite competencies necessary for success in curricula of study.
5. Student development services, which, through counseling and guidance, assist individuals with decisions

- regarding occupational, educational, and personal goals.
6. Training programs for specific employment opportunities that are available in business, industries, and professions.
  7. Career Studies programs and Continuing Education programs, both credit and noncredit, which provide educational opportunities for persons who wish to continue and expand their learning experiences and employment opportunities.
  8. Activities that foster greater international awareness.
  9. Opportunities for qualified high school students who obtain college credit through dual enrollment arrangements between public schools and the College.
  10. Cultural and educational programs that supplement the other programs of the College and promote a sense of civic responsibility.

### **College Facilities**

Virginia Western is divided by Colonial Avenue into North and South Campuses. The South Campus has five buildings, four of which were acquired in 1966 from the Roanoke Technical Institute. Webber Hall was dedicated by Governor John N. Dalton on September 26, 1980.

Chapman Hall houses classrooms, faculty offices, and laboratories for Air- Conditioning and Refrigeration, Machine Shop, Photography and Radio/TV. Craig Hall is the location of the College Bookstore, faculty offices, and general classrooms. Duncan Hall contains classrooms and faculty offices. The Fine Arts Building contains the offices of the Campus Police and Facilities Management Services, as well as classrooms, faculty offices, a computer graphics laboratory and the Painter Art Gallery. Webber Hall houses the laboratories for Welding, Automated Manufacturing, Automotive, Civil Engineering/Drafting, Electrical, Electronic Servicing, CAD, Engineering Microcomputers, classrooms and faculty offices. Also, temporary buildings provide space for the Tech-Prep Program, Student Support Services, Office of Continuing

Education, Center for Innovative Technology, classrooms and faculty offices. In addition, the South Campus houses a 2100 square foot greenhouse along with a two acre-Community Arboretum.

A new Humanities Building on the South Campus opened in November 1994. The 30,000 square foot building houses studio, gallery, lecture and computer graphics lab space for the Art Department, photography darkroom and laboratory space, a large multipurpose room, and two general classrooms.

The North Campus has four buildings surrounded by a courtyard planted with shrubs selected to accent the four seasons. The campus was dedicated on October 23, 1969, and its buildings were named for men influential in education or in the development of the Southwestern Virginia region.

Fishburn Hall, the Administrative Building, houses the offices of the President, the Dean of Academic and Student Affairs, the Business Office, the Dean of Financial and Administrative Services, the Personnel Office, Payroll and the Cashiers. The building also serves to house the Offices of Admissions, Records, Counseling, Financial Aid, Student Activities, Career Services/Job Referral, and Veterans Affairs. Several offices and classrooms are also contained in Fishburn Hall.

Opposite of Fishburn Hall is the science building, Anderson Hall. Anderson Hall contains facilities for the Health Technologies of Nursing, Dental, and Radiography, laboratories for the natural sciences, classrooms, faculty offices, Duplicating Department, and the Office of Institutional Research. A Dental Clinic that is open to the public and offers services at no charge is also located in Anderson Hall.

In the center of the courtyard is Brown Library. The Library also houses the Learning Center, the Graphic Arts Department, and the Child Care Media Center.

The Business Science Building, alongside Colonial Avenue, contains data processing instructional areas, the Computing Center, office technology and wood processing classrooms, management and accounting laboratories, and faculty and staff offices. A cafeteria, drama and speech classroom, a

theater workshop, and the Whitman Auditorium are also located in this building.

The campus also has a bridge spanning Colonial Avenue that connects Webber Hall and the Business Science Building. This connection makes it possible to access both North and South Campus without physically crossing the road.

The College's six lighted tennis facility is located on North campus along with a Physical Education building that contains classrooms and faculty offices.

## **CENTER FOR BUSINESS, INDUSTRY AND TECHNOLOGY**

The Center for Business, Industry, and Technology is dedicated to working with business, industry, and government in the Roanoke Valley. The center's goal is to provide up-to-date training information, resources, and support services to the existing business community, as well as to potential business and industry.

Strategies to accomplish this goal include the implementation of a combination of several programs at Virginia Western's Center for Business, Industry, and Technology. The center is ready to assist you with your training needs.

### **Vision**

Virginia Western Community College's Center for Business, Industry and Technology will be a leader in training and development for business, industry, and government in Virginia.

### **Mission**

Virginia Western Community College's Center for Business, Industry, and Technology mission is to provide state-of-the-art training and retraining resources, information, consulting and support services to the business community in the region.

### **Benefits to Business and Industry**

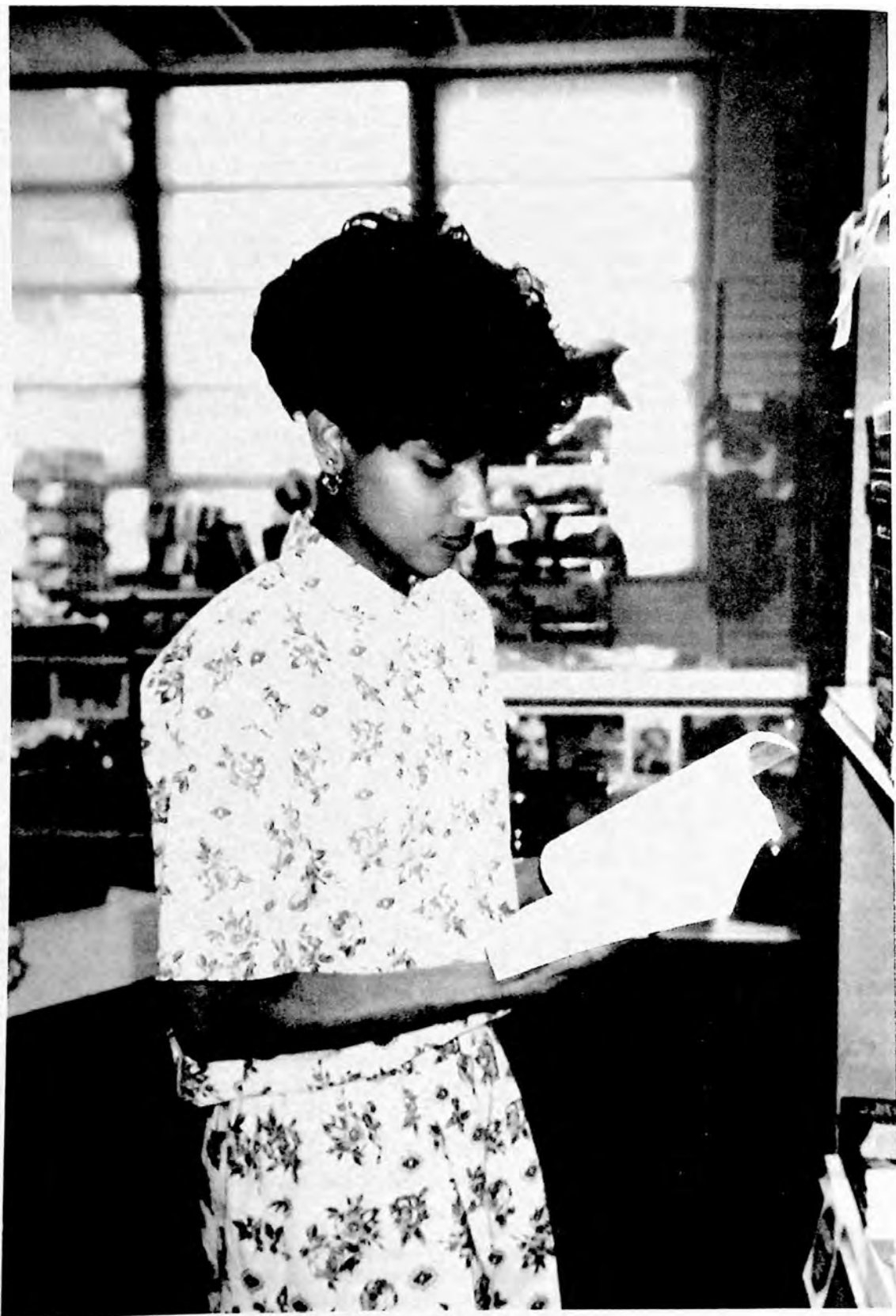
- Eliminates the need for special training staff and related costs
- Eliminates the need for designated space and special equipment for training

- Supervisory and/or production staff time can be directed to regular responsibilities rather than redirected for training
- Enables new and/or small companies to compete with more established or larger companies by providing the kind of training necessary to be competitive
- Reduces or eliminates down time for training — company equipment can remain in productive operation
- Enables new businesses or industries to be fully operational upon opening

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For additional information contact:

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 Business and Industrial Training Programs  
 Virginia Western Community College  
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 Roanoke, VA 24038  
 Telephone: (703) 857-7315



## PART II

**ADMISSIONS****Eligibility**

Any person who has a high school diploma, a GED, or who is 18 years of age and can benefit from classes at the college may be admitted.

High school students in the 10th, 11th, or 12th grade may attend with approval of their high school principal.

Persons age 15-17 who are not attending secondary schools may attend with approval of the school superintendent of the city or county of the applicant's residence.

Others with special circumstances may attend with approval of the Virginia Western Community College Admissions Committee.

The college reserves the right to evaluate special cases and to refuse admission to applicants when considered advisable in the best interest of the college.

**Application Procedure**

All applicants must submit an "Application for Admission". Applicants who graduated from high school within the previous year must provide high school transcripts.

Applicants may be required to complete an on-campus academic assessment prior to enrollment in certain classes or programs. The assessment is normally administered during the registration period and is used to assist in placing students at the appropriate level of instruction.

Applicants who wish to enter a program of study (curriculum) must provide official transcripts from all high schools, colleges, and universities attended and may be required to meet with a college counselor prior to admission to: (a) discuss educational interests, (b) determine needed academic assessments, (c) plan admission to a specific curriculum, and (d) examine other reasonable standards to insure that applicants possess the potential to meet curriculum requirements.

Applicants who do not meet academic requirements for a specific course or curriculum may be required to complete a developmental course or program before acceptance to the desired curriculum.

Applicants seeking admission to one of the Health Technology programs (Nursing, Radiography, Dental Hygiene) must meet additional specific entrance requirements. Applicants interested in one of these programs should meet with a college counselor and complete specific requests for entry into the curriculum.

**Admissions Policy**

The following applicants are eligible for admission to Virginia Western Community College:

I. Applicants who have never attended a college:

Applicants who are 18, or who have a GED or have graduated from high school will be accepted. Others may be accepted under the following conditions:

- A. If they are enrolled in the 10th, 11th, or 12th grade and have permission of the principal to take a course(s);
- B. If they have dropped out of school and have the approval of the school system under whose jurisdiction they reside;
- C. If they are enrolled in school and have not yet reached the 10th grade. These applicants may be accepted by action of the Admissions Committee to take a course under special conditions after it is determined that the student can benefit from attending the college.

II. Applicants who have previously attended college:

Applicants may be admitted if they fall into one of the following categories:

- A. Academically in good standing;
- B. On academic probation. These applicants may be admitted with academic restrictions.
- C. On academic suspension. These applicants are eligible after one semester has passed. They may be admitted after meeting the following conditions:
  1. Upon completion of appropriate placement tests;
  2. Upon recommendation of a Virginia Western Community College counselor;

3. With approval of the Admissions Committee or the Coordinator of Admissions and Records.

Exceptions to the waiting period of one semester may be made if one of the following conditions exists:

- a. Students wishing to enter a different curriculum and have at least a 2.0 on the courses applicable to the new curriculum;
  - b. Students who were suspended for low cumulative GPA and have an acceptable curriculum GPA;
  - c. Noncurricular students wishing to take courses that are primarily job training;
  - d. Students who feel they have mitigating circumstances should direct a letter to the Admissions Committee asking for acceptance. The letter must address the following:
    - (1) The course or courses desired;
    - (2) The goal or curriculum which will be pursued;
    - (3) A statement explaining the academic difficulty that led to suspension;
    - (4) An explanation of what has been done to enhance the student's chance for success.
- D. On academic dismissal. Those applicants who have been out of school less than three years may appeal to the Admissions Committee for admission if they feel mitigating circumstances warrant consideration. Direct a letter to the Admissions Committee containing the following:
1. The course or courses the applicant wishes to take;
  2. The curriculum the applicant wishes to enter and the goal concerning education;
  3. A statement on why the applicant had academic difficulty that led to dismissal;
  4. A strong case on behalf of the applicant as to why success is expected in the third or more attempt at college level education.

These applicants may be requested to provide additional information on an individual basis.

- E. Students who have been on academic dismissal for longer than three years may be admitted upon completion of an "Application for Admission".

**NOTE:** In all cases, Virginia Western Community College reserves the right to deny admission to anyone who the college determines is unable to benefit from attendance at the institution.

### **Admission Priorities**

When admission to certain selective programs must be limited because the number of applicants exceeds available space, priority shall be given to all qualified applicants as follows: (1) residents of the political subdivisions supporting the college, followed by (2) other Virginia residents, (3) residents of other states, and finally (4) international students with student or diplomatic visas.

### **Resident Requirements**

For purposes of in-state tuition, a Virginia resident is defined by state law as one who has lived in Virginia, with the intent to remain a Virginian, for a period of at least one year prior to the beginning of the term for which he is enrolling. The burden of proving eligibility for in-state tuition rates rests with the applicant. All applicants to the College who claim entitlement to Virginia in-state tuition rates must complete the domiciliary items included with the application form and provide whatever documentation may be deemed necessary.

The appeals process for applicants determined ineligible for in-state tuition rates is as follows:

1. Initial determination will be made by a member of the admissions staff.
2. Intermediate review will be conducted, upon appeal, by the Coordinator of Admissions and Records.
3. Final administrative review will be made by an appeals committee.

Additional information is available from the Coordinator of Admissions and Records.

### **Admission of International Students**

In addition to the general requirements of the College, all international students must demonstrate proficiency in both written and spoken English. An I-20 will not be issued less than 60 days from the beginning of the next semester. Students must also present proof of health insurance before registering for classes.

Written English proficiency may be demonstrated by submitting acceptable scores on the "Tests of English as a Foreign Language" (TOEFL - administered by the College Entrance Examination Board, Princeton, N.J.). A combined score of 450 on the TOEFL is the minimum required to be considered for admission.

If these preliminary scores are acceptable, the applicant must also demonstrate proficiency both in speaking and understanding the English language. If a personal interview at the College is not possible, a letter that testifies to the student's oral proficiency will be acceptable. This must be executed by an official of the U.S. Government residing in the student's native country. TOEFL scores must be submitted along with the application.

Current policies of the U.S. Immigration Department state that international students must prove that financial responsibility will be met. All other immigration policies must also be satisfied.

### **Admission of Senior Citizens**

Senior citizens must apply to the college and be admitted as all other students. Under the Virginia Senior Citizens Higher Education Act of 1974, amended in 1976, 1977, 1982, and 1988, anyone who is 60 years of age or older, who is a legal domiciliary of Virginia, and whose taxable income does not exceed \$10,000 is eligible to enroll in credit courses for academic credit at the college.

Senior citizens may register for and audit courses offered for academic credit, or for courses not offered for academic credit.

Senior citizens pay no tuition or fees except fees established for such things as course materials and laboratory fees.

Senior citizens registering under the provisions of this act may register only after tuition-paying students are accommodated

except when the senior citizen has completed 75 percent of the requirements for a degree.

### **Students Transferring From Other Colleges**

Students transferring from other colleges to Virginia Western Community College must complete an "Application for Admission".

Transfer students must have official transcripts from all colleges previously attended mailed directly to the Admissions Office, Virginia Western Community College, P.O. Box 14065, Roanoke, Virginia 24038. (See "College Transcripts")

Transfer students who are ineligible to return to a college previously attended generally will not be eligible to enroll at Virginia Western until at least one semester has elapsed. Special conditions for the admission of such students, including placement on probation, will be imposed as deemed appropriate by the College.

Generally, no credit will be given for courses with grades lower than a "C" when students transfer from other colleges. Transfer students may be advised to repeat courses if it is clearly to their advantage to do so in order to make satisfactory progress in their curriculum.

In determining transfer credit, course work applicable to the curriculum at Virginia Western Community College will be accepted if the work was taken at an institution accredited by one of the regional accrediting associations. All other credit for course work will be evaluated on an individual basis.

### **Advanced Placement and Credit-by-Examination**

Students may be awarded college credit if they can demonstrate that previous educational study, training or work experience entitles them to credit for specific courses applicable to their program of study. Appropriate documentation for special training or experience must be provided and included in the student's file. Students should contact the Coordinator of Admissions and Records to determine the necessary steps for receiving such credit.

### **Credit-by-Examination**

The college participates in the nationally recognized **Advanced Placement (AP) and College-Level Examination Program (CLEP)**. Students must provide an official copy of their score report and must meet the minimum score requirement for the course. In addition, locally prepared departmental "challenge" examinations are available for some courses offered by the college. (Normally, local examinations are not given when national exams are available.) A student may take a challenge exam for a course only once and a challenge may not be used to remove an "I" or "F" grade or to improve a grade already earned. In addition, a student may not challenge a lower level course in a subject for which he or she has previously earned credit. Credits awarded by challenge examination may apply toward graduation requirements and will become part of the student's permanent record but will not necessarily transfer to another institution. The grade earned on a departmental exam will be entered on the student's transcript.

### **Military Credit**

As a participating member of Servicemembers Opportunity Colleges (SOC), Virginia Western follows the American Council on Education's **ACE Guide to the Evaluation of Educational Experiences in the Armed Services** in determining the value of learning acquired in military service when applicable to the service member's program of study. The college also uses **CLEP, DANTES, and Advanced Placement (AP)** credit-by-examination for awarding credit to servicemembers.

### **Dual Enrollment for High School Students**

High school students may be allowed to meet some of their high school graduation requirements while simultaneously earning college credit. Officials from both the high school and Virginia Western Community College must ensure that students registered under this arrangement are qualified to benefit from the work and to be successful. Students must be recommended by the high school and must meet the admissions requirements established by the

college. High school students interested in earning dual enrollment credit should first contact their principal. Further information may be obtained from the Coordinator of Admissions and Records.

### **Classification of Students**

All students are classified according to the following categories:

**CURRICULAR STUDENT** - A student working toward completion of an associate degree, certificate, or career studies program.

**NONCURRICULAR STUDENT** - (1) A student auditing course(s) for no credit; (2) High school students who, with the permission of their school principal, are currently enrolled in a college course; or (3) A student not enrolled in an associate degree, diploma, or certificate program who may be taking a course(s) for credit.

**FULL-TIME STUDENT** - A student is considered a full-time student if carrying 12 or more course credits. **NOTE:** A student wishing to complete a degree on schedule should take 16-18 credits per semester.

**PART-TIME STUDENT** - A student is considered part-time if carrying fewer than 12 course credits.

**FRESHMAN** - A student is classified as a freshman until 30 course credits are completed in a designated curriculum.

**SOPHOMORE** - A student is considered a sophomore after 30 or more course credits are completed. Transfer credits are included providing they meet requirements of the student's curriculum.

### **Student Permanent Record**

The Records Office at Virginia Western Community College maintains records on each student attending, or who has attended, the College. These records are kept for at least three years and contain the following:

1. High school transcripts
2. Other college transcripts and evaluations
3. Correspondence with student
4. Grade change forms
5. Requests for transcripts

The Coordinator of Admissions and Records is the official in charge of student



records. Administrators, counselors, and faculty who have need to see student records to assist a student in his academic pursuits have access to these records. Clerical employees in Admissions and Counseling Services originate and maintain student records. College personnel involved in institutional research may be permitted access to records on a need-to-know basis. All others are required to have written permission from the student.

Records may be destroyed after a student has not been in attendance for three years. A student can review his file by making a request to the Coordinator of Admissions and Records who will arrange to review the file with the student.

If a student finds that statements or other information contained in his file are, to his knowledge, incorrect, the following procedure should be followed to clarify the situation:

- A. The student will call the Coordinator's attention to any possible errors.
- B. If the Coordinator finds the item or items to be in error, he will initiate corrective action.
- C. If the Coordinator cannot resolve the problem, it will be referred to the Dean for review and further action. The student will be informed of any action taken.

Students should request corrective action as soon as possible.

**Release of Directory Information -** "Directory Information" (name, address, program of study, and semesters in attendance) may be released upon request at the discretion of the college. Any student who does not wish to be included in the release of directory information must provide a written request to the Coordinator of Admissions and Records.



## PART III

**EXPENSES****Tuition**

Tuition rates for 1995-96 were not available at the time this catalog was published. Tuition rates will be printed in the appropriate *Schedule of Classes*. Current information can be obtained from the Office of Admissions.

Student tuition is paid on a credit-hour basis. The typical full-time academic load is between 15-17 credits. College approval is required to enroll for more than 18 credits per semester. (Exception: 18 credits plus one credit for orientation does not require approval.)

Payment of tuition enables the student to use the Bookstore and other facilities of the College.

All tuition and fees are approved by the State Board for Community Colleges which has the authority to change any and all tuition and fees without prior notice.

**Tuition Refunds**

1. Students shall be eligible for a refund for those credit hours officially dropped during the drop period for the session. The refund will be at the full credit rate for those credits dropped. After the drop period for the session has passed, there will be no refund.
2. Eligibility
  - a. The student must complete a withdrawal form and obtain the appropriate signatures.
  - b. The form must be completed in the time frame described.
  - c. The student must deliver the form to the Admissions Office and have it receipted and dated. This date is the official withdrawal date.

**Fees and Charges**

A College Services Fee of \$2 per student per semester will be charged. This fee is payable with tuition and is non-refundable.

**Books and Materials**

Students are expected to obtain their own books, supplies, and consumable materials needed in their studies. It has been

estimated that the cost of these items will average approximately \$300 per semester for the full-time student. This cost is subject to change since it is based on publishers' and suppliers' listed prices.

The Bookstore carries a complete line of textbooks, supplies, art material, and general merchandise.

**Rules for Bookstore Refunds**

The Bookstore Manager is the only authorized person who can accept books for refund. Books returned for refund are subject to inspection and must be in new condition with the plastic shrink-wrap unopened and no markings or other damage. The book must be presented to the Bookstore Manager within the first two weeks of the semester to receive a refund. Refunds are made by check, which will be mailed to the student. No refunds are issued without a receipt.

**Suspension of Student for Nonpayment of Tuition and Fees, College Loans, College Fines, or Other Debts Owed the College**

A student's continued attendance at the College is dependent upon proper settlement of all debts owed the institution. Should the student fail to satisfy all due and payable amounts for tuition and fees, College loans, College fines, or other debts owed the College, the student may be suspended. If suspended, the student will not be allowed to register in any succeeding semester until all current debts owed to the College have been satisfied.

Students who damage or lose school property will be expected to pay charges for such losses.

No transcripts, certificates, diplomas, or degrees will be issued, nor will students be permitted to complete registration, until accounts are satisfactory to the Business Office, Bookstore, and Library.

## PART IV

**STUDENT FINANCIAL AID****How and When to Apply**

Various forms of financial aid from both public and private funds are available to students, including grants, scholarships, loans, and work-study. Any student or potential student who wishes to apply for financial aid must submit a completed **Free Application for Federal Student Aid** to Federal Student Aid Programs in Iowa City, Iowa. There is no charge for this application, which may be obtained at the Office of Financial Aid or from a high school counselor.

Students transferring from another college to Virginia Western must also have a financial aid transcript forwarded by the Financial Aid Office of each college previously attended. This is required of all transfer students, regardless of whether or not financial aid was received at other colleges.

Since applications are processed in the order in which they are received, and some forms of financial aid are available on a limited basis only, students are encouraged to apply as early as possible. The recommended deadline in applying for fall semester aid is **June 30**.

NOTE: A new financial aid application must be submitted for each academic year of enrollment.

**Eligibility for Financial Aid**

Local sponsorship programs are available to qualified students based on academic ability and may be awarded without repayment or work obligations. Scholarships normally are provided in the form of tuition coverage. Since financial need is also a consideration in the awarding of some scholarships, all candidates should submit a **Free Application for Federal Student Aid**.

Federal and state-funded grant, loan, and work-study programs are available on the basis of documented financial need to cover both direct expenses, such as tuition and books, and indirect expenses, such as transportation and room and board. The following eligibility criteria are required for federally funded grant and loan programs:

1. Documented financial need (Note: Financial records including state and federal income tax returns may be required.)
2. Documented citizenship or permanent residence status
3. No outstanding obligations on financial aid previously received at any educational institution or defaults on educational loans

Students must continue to satisfy the above criteria and maintain satisfactory academic progress to retain financial aid eligibility. Satisfactory progress is defined primarily as a passing grade (A, B, C, D, P, or S) in at least two thirds of the credit load each semester.

A student deemed ineligible for continuation of financial aid may request reinstatement in view of extenuating circumstances by submitting a written appeal to the Financial Aid Committee.

**Types of Financial Aid**

**FEDERAL PELL GRANT** – a federal aid program based on financial need. A recipient must be enrolled in an eligible program of study and cannot have received previously a baccalaureate degree. Awards are for both direct and indirect educational expenses. Because Pell Grants often provide a foundation for other forms of aid, students seeking any type of financial aid should apply for Pell.

**FEDERAL SUPPLEMENTAL EDUCATIONAL OPPORTUNITY GRANT (SEOG)** – a federal program designed to assist students with financial need which exceeds that covered by other aid programs. Priority normally is given to Pell Grant recipients who, after assuming a work-study or loan commitment, still demonstrate additional need.

**COLLEGE SCHOLARSHIP ASSISTANCE PROGRAM GRANT (CSAP)** – a program administered by the State Council of Higher Education for Virginia, designed to assist students with exceptional financial need. To qualify for an award, a student must be a domiciliary resident of Virginia and must be enrolled on at least a half-time basis.

**VCCS GRANT PROGRAM** – a state program under which students with financial need can receive support up to the full

amount of their tuition expense. To qualify, a student must be a domiciliary resident of Virginia and must be enrolled on at least a half-time basis.

**PART-TIME TUITION ASSISTANCE PROGRAM (PTAP)** – a state aid program similar to the VCCS Grant Program, but directed to students enrolled for 3-5 credits per semester.

**MARY MARSHALL NURSING SCHOLARSHIP PROGRAM** – available to nursing majors based on both scholarship and need. Recipients must engage in full-time nursing practice within the Commonwealth of Virginia after graduation. Applications must be submitted by July 30.

**VIRGINIA WESTERN COMMUNITY COLLEGE ACADEMIC SCHOLARSHIP PROGRAM** – awarded each year to area high school seniors on the basis of academic achievement. Demonstration of financial need is not required. The scholarship funds are provided by the various governmental subdivisions of the College's service region. Awards are for tuition coverage for two semesters of full-time study and are received during the first year of enrollment.

**VIRGINIA WESTERN COMMUNITY COLLEGE NURSING SCHOLARSHIP PROGRAM** – two scholarships are awarded at the end of Spring semester to students ready to enter the second year of the nursing program. One scholarship is based primarily on financial need, and the other on outstanding academic achievement.

**VIRGINIA WESTERN COMMUNITY COLLEGE EDUCATIONAL FOUNDATION SCHOLARSHIP PROGRAM** – provided to deserving students in accordance with criteria specified by the scholarship donors. The student's academic major, financial need, and past academic performance normally are considered.

**PRIVATE SCHOLARSHIP PROGRAMS** – several privately funded scholarship programs are provided by supporters of the College for qualified students in various fields of study. One such program is the G.E. Matheny Scholarship, available each year to an outstanding sophomore student upon completion of a program that leads to a baccalaureate degree in the field of biology. The award is provided for use at a

four-year institution. Other privately funded scholarships available for study at Virginia Western Community College are provided by the following sponsors:

American Business Women's Association  
 American Dental Hygienists' Association  
 Atlantic Companies  
 Auxiliary to the Roanoke Valley Dental Society  
 Mike Bassett Memorial Scholarship Program  
 Bedford Community Health Foundation, Inc.  
 Business and Professional Women's Foundation  
 Central Fidelity Bank Scholarship Program  
 Chesapeake Corporation Foundation  
 City of Roanoke Redevelopment and Housing Authority  
 Continental Societies Scholarship Program  
 Cooper Wood Products Foundation, Inc.  
 Cox Cable Roanoke  
 Daughters of the American Revolution  
 Elks National Foundation  
 Government and Business PC Users Group  
 Harry T. Layman Scholarship Program  
 HCA Lewis-Gale Hospital  
 Lewis-Gale Foundation  
 Lynchburg Dental Auxiliary  
 National Association of Women in Construction, Roanoke Chapter  
 Frank E. Page Scholarship Program  
 Mr. and Mrs. Emanuel Payne Scholarship Program  
 Barry L. Pendry Memorial Scholarship Program  
 Roadway Package System Scholarship Program  
 Roanoke Academy of Medicine Auxiliary  
 Roanoke Memorial Hospitals  
 Salem Educational Foundation  
 Virginia Dental Association  
 Virginia Dental Hygienists' Association, Inc.  
 Virginia League for Nursing

Alice Becker Hinchcliffe Williams  
Scholarship Program

**FEDERAL STAFFORD LOAN PROGRAM** – permits eligible students to receive long-term, low-interest educational loans with no repayment or interest obligations while they are enrolled in college. Loans are provided by banks, savings and loan associations, and credit unions. Borrowers must be enrolled at least half-time and demonstrate financial need.

**UNSUBSIDIZED STAFFORD LOAN PROGRAM** – similar to the Federal Stafford Loan Program, except that demonstration of financial need is not required. Meanwhile, the student must pay or capitalize interest while enrolled in school.

**FEDERAL PLUS LOANS** – the Federal PLUS Program is designed to assist the parent or legal guardian of a dependent student whose educational expenses exceed other financial resources.

Repayment normally begins within 60 days from the date of disbursement and can continue over a ten-year period.

**EDVANTAGE LOAN PROGRAM** – a state-funded program similar to PLUS. A fifteen-year repayment period is provided, assuming the borrower repays the minimum monthly amount. The interest rate varies in direct relationship to the prime lending rate and has no ceiling.

**FEDERAL WORK-STUDY PROGRAM** – provides federally funded part-time employment opportunities on campus for students to meet part of their educational expenses.

**VIRGINIA WAR ORPHANS EDUCATION PROGRAM** – provides educational assistance for children of certain veterans and service personnel. Applicants must be at least 16 years of age and no older than 25 years of age, and must have a parent who died or became permanently and totally disabled due to a war-related injury or who is listed as a prisoner of war or missing in action. Further information and application forms are available from the Director Division of War Veterans' Claims, Commonwealth of Virginia, 210 Franklin Road, S.W., Roanoke, Virginia 24011. Applications should be submitted at least four months before the expected date of enrollment.

**VIRGINIA PUBLIC SERVICE ORPHANS EDUCATION PROGRAM** – provides tuition support for children of law enforcement officers, firefighters, and rescue squad members. Applicants must be at least 16 years of age and no older than 25 and must have a parent who was killed while serving in one of the above capacities.

**VIRGINIA NATIONAL GUARD TUITION ASSISTANCE PROGRAM** – provides partial reimbursement for tuition costs.

Demonstration of financial need is not required. Members of the Virginia National Guard may be eligible. Applications are available from unit commanders.

### **Veterans Affairs**

The Veterans Affairs Office assists students in applying for VA benefits, in furthering the process of certifying eligibility, and in maintaining accurate enrollment and student status records. All veteran students receiving educational benefits must be enrolled in an official curriculum leading to a diploma, certificate, or degree. Veterans and eligible dependents of veterans should contact the Office of Veterans Affairs, Fishburn Hall, Room 005, on the Virginia Western campus. The telephone number is 857-7395. Programs of education offered at Virginia Western Community College are approved by the Commonwealth of Virginia Department of Education for VA entitlements.

## PART V

**ACADEMIC SUPPORT SERVICES****Counseling Services**

Potential students and newly enrolled students should contact the Counseling Office for admission and registration information and for assistance in making such decisions as choice of career, curriculum of study, and other academic or personal matters. Because student success is the highest priority of the College, a staff of full-time counselors is available to assist students in determining and fulfilling their educational goals.

The Counseling Office offers assistance in a variety of formats. Classes are taught on subjects such as Study Skills, Career Development, College Survival, and Personal Development. Seminars on transferring to four-year colleges, personal finances, test-taking skills, and other useful topics are offered throughout each semester. Individual and group counseling are offered to students seeking assistance with educational, career, or personal problems.

**Career Services/Job Referral**

The College maintains the Office of Career Services/Job Referral to assist in career development. Information is available for the student who is selecting a college major or trying to determine an occupational direction. Descriptions of thousands of occupations are provided along with salaries and employment outlook in each occupation. The Career Services/Job Referral Office houses information on tuition, program requirements, and transfer procedures for students planning to transfer.

The counseling staff provides individual assessments of interests, abilities, and vocational personality.

The Office serves as an employment referral service and maintains listings of full- and part-time positions available to students.

**Student Support Services Program**

The Student Support Services program at Virginia Western Community College is designed for students with academic potential who by reason of educational, cultural, economic background, or disability

are in need of special services. The focus of Student Support Services is to help qualified students successfully complete college. Services available include tutoring, career counseling, personal counseling, assistance in obtaining financial aid, academic counseling, cultural activities, and individualized assistance as needed.

**Services for Persons with Disabilities**

Persons with a disability who are considering applying for admission on a full- or part-time basis should schedule an appointment with a Student Support Services counselor. The purpose of the meeting is to discuss program accessibility and individual needs. Applicants with disabilities who plan to enroll in the College are encouraged to advise the Student Support Services counselor of their need for auxiliary aids, readers, tutors, interpreters, taped materials, or other services and devices as far in advance as possible before classes begin. The Student Support Services Office is located in T-111 and the phone number is 857-7286. The TDD number is (703) 857-7918. The Section 504 Coordinator is located in Fishburn Hall, Room 018, and the phone number is 857-7240 should you have concerns or need specific information.

**Student Activities Program**

The student activities program is based on the belief that a complete college experience involves not only the development of academic and/or vocational competencies but also opportunities for students to develop their social and intellectual abilities through organized co-curricular activities. The Student Activities Office coordinates social, cultural, educational, and recreational programs to enrich campus life. Music and dance performances, art exhibitions, lectures, plays, dances, and team sports are all part of the student activities program of the College.

**STUDENT GOVERNMENT ASSOCIATION (SGA)** – The SGA serves as a vital link in communication among students, faculty, and administration. All students are members of the SGA and are entitled to participate in meetings and election of officers. In keeping with the

purpose of the SGA to further the interests of students and the College through student representation, SGA officers are members of other college committees and organizations that affect student life.

**CAMPUS CLUBS AND ORGANIZATIONS** – Official recognition is given to scholastic, civic, athletic, professional, and religious clubs and organizations that have applied for and received College approval. Every club or organization must have a faculty sponsor. Students interested in information regarding new or established clubs and organizations should contact the Office of Student Activities.

**STUDENT PUBLICATIONS** – The Student Activities Office produces the student newsletter, which serves as an important means of student expression and campus communication. The *Student Handbook* is published annually to provide students with information about policies and procedures of the College.

### **Off-campus Housing**

No dormitories or other residential facilities are provided by the College; however, a housing file, available through the Student Activities Office, provides information regarding available places to live within the community. This service includes a listing of rooms, apartments, and houses to rent or share, the names of other students who are looking for roommates, and other pertinent information to assist students in obtaining suitable housing.

### **Student Health Services**

Since Virginia Western is a nonresidential college, no health services are provided. Students are encouraged to attend to their own personal well-being by following good health and safety practices. Information on a student accident and sickness healthcare plan may be obtained in the Student Activities Office. In the event of a medical emergency, first aid kits and trained personnel are available for assistance in most buildings on campus.

### **Library**

Educational programs undertaken at Virginia Western Community College are supported in Brown Library by a collection of

relevant books and study materials. The considerable variety of reading matter in the collection reflects the multitude and diversity of programs offered at the College. In the selection of library materials, consideration is also given to the personal and professional interests and needs of students and faculty. Formal and informal instruction in the use of books and libraries is given throughout the student's college stay.

Library resources include: 53,000 books; 2,300 record albums and cassette tapes; 7,600 reels of microfilm; and current subscriptions to 500 periodicals and 16 newspapers. Adjacent reading areas are carpeted and contain individual study carrels to reduce noise levels and create an atmosphere conducive to browsing, reading, and studying.

A guide to the Library has been prepared by members of the library staff and is available at the Library Information Desk. Before beginning work on research assignment or term papers, students are advised to consult with a reference librarian.

It is the policy of Brown Library to charge fines for overdue books and audiovisual items. The rate per day is 20 cents per item. There is a grace period of seven (7) calendar days beyond the original due date. If the item is returned after the grace period, the fine will be charged from the first day the item was overdue, excluding Sundays and other days the Library is closed.

College policy does not permit the student to register, graduate, or receive a grade report until the Library reports to Admissions that the student has either paid for the item or returned the item and paid the fine.

### **Learning Center**

The Learning Center is the resource center for supplementary instructional assistance for students. Tutorial assistance, computer-assisted learning, video-assisted learning, and other audiovisual presentations are available to students. Tutoring is available for students in most subject areas taught by the college. Tutorial assistance is offered to supplement individual classroom assignments. Lab assistants and tutors consult with individual students to assess their need for instructional assistance. Facilities are available for individual study and small study

groups supervised by tutors and lab personnel. In addition, a small microcomputer lab and a variety of microcomputer software are available for use by students and the community. The Learning Center gives placement tests for new students and administers the CLEP testing program. Lab assistants administer, monitor, and score tests, and provide assistance with audiovisual equipment and materials for students in the Learning Center. The Learning Center is located on the ground floor of Brown.

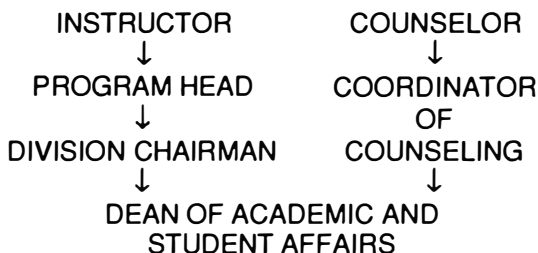
### **Channels of Communication for Academic Complaints, Suggestions, Appeals, and Grievances**

A grievance is a formal written allegation by a student charging unlawful or unfair treatment with respect to the application of laws, rules, policies, procedures, or regulations under which the College operates.

Each student has the right to express an opinion, make suggestions, submit grievances, and appeal administrative decisions. Channels of communication are always open to students with personal problems and to those who wish to suggest improvements.

While students may elect to resolve a noninstructional conflict by contacting the Office of Counseling Services, instructional concerns should be addressed through appropriate academic channels.

To facilitate the communication process, one of the following administrative channels should be followed:



In the event that the grievance cannot be resolved satisfactorily following either of the above channels, an ad hoc grievance committee may be convened by the President of the College to review the case and make recommendations to the President. The President's decision shall be final. The ad hoc committee shall consist of

at least one administrator, two teachers, and two students. Members shall not be from the division involved. One student and one teacher may be selected by the student filing the grievance. The appointed administrator shall be chairman of the committee and will be responsible for calling the meeting and keeping a record of the proceedings.

**A complete statement of student rights, responsibilities, and conduct is included in the Student Handbook.**

### **Policies and Procedures Relating to Sexual Misconduct**

Sexual misconduct is a violation of the values and behavioral expectations of the college and will not be tolerated. All reported violations within the jurisdiction of the college, including sexual assault and harassment, will be investigated and, as warranted, will be resolved through appropriate college disciplinary processes and/or criminal proceedings in accordance with applicable state and federal laws.

#### **Sexual Assault**

Sexual assault consists of physical contact of a sexual nature without consent. A specific definition of what constitutes unauthorized sexual contact is published in the faculty handbook and is also available upon request from the Counseling Office or Campus Police.

#### **Sexual Harassment**

Sexual harassment consists of unwelcome sexual advances, requests for sexual favors, or other verbal or physical conduct or written communication of a sexual nature which is intimidating, hostile or offensive. Sexual harassment shall be considered to have occurred when the following circumstances are presented:

1. Toleration of the conduct is an implicit or explicit term or condition of admission or status;
2. Submission to or rejection of such sexual conduct is used as a basis for academic evaluation affecting such individual; or
3. Such conduct interferes with a student's academic performance, or creates an intimidating, hostile, or offensive learning environment.



## **Reporting Procedures**

Students who believe that they have been subjected to sexual assault or harassment should take their complaints to the Title IX Coordinator located in Fishburn Hall 030, telephone 857-6067. The student will be counseled on the validity and seriousness of the allegation and will be informed of proper procedures that should be followed.

Existing disciplinary and grievance procedures or informal proceedings, as appropriate, shall serve as the framework for resolving allegations of sexual misconduct. Anyone found guilty of sexual misconduct will be subject to campus disciplinary penalties ranging from probation to expulsion, and, in addition, criminal prosecution in the event of violations of applicable laws.

The rights of both the accused and the complainant shall be protected, and the complainant's sexual history will be excluded in campus proceedings. The confidentiality of proceedings will be maintained to the fullest extent possible.

## **Policy on Substance Abuse**

Substance abuse is a serious impediment to the efforts of the College to provide the best possible educational opportunity for students. Furthermore, alcohol and drug abuse interferes with clear thinking and performance and imperils personal health and public safety. Accordingly, the College is committed to a three-part policy on substance abuse: education and prevention, enforcement, and referral for counseling.

**EDUCATION AND PREVENTION** – Information on alcohol and drugs for the purpose of helping students develop a realistic understanding of the consequences of substance abuse and to make responsible decisions for their own welfare and the welfare of others is available from the Counseling Office and the Office of Student Activities. In addition, various seminars, speakers, and other events are periodically sponsored by the College to promote awareness of substance abuse. Credit courses that develop students' understanding of this issue are offered through the Divisions of Social Science Health Technology, and Continuing Education.

**ENFORCEMENT** – In accordance with policies adopted by the State Board for Community Colleges, students may not possess, use, or distribute any illegal substances while on campus, attending a College-sponsored, off-campus event, or while serving as a representative of the College at off-campus meetings. This prohibition includes alcoholic beverages, except where permitted. Students who violate this policy will have College charges processed against them in the normal manner of due process provided by College disciplinary procedures. Violations of this policy that involve a criminal offense will result in notification to the appropriate local, state, or federal law enforcement authorities for appropriate action.

**REFERRAL FOR COUNSELING** – The Counseling Office provides information and referrals to community agencies, organizations, and health-care facilities for treatment of substance abuse. To the extent permissible by law, confidentiality is protected so that students who seek help for substance-abuse problems can receive counseling and referral for treatment without fear of reprisal. Questions regarding counseling should be directed to the Counseling Office.

## **Policy on Firearms**

Unauthorized possession, storage, or firing of firearms and weapons on College property is prohibited.

## **Parking on Campus**

The use of any motor vehicle on the campus by any student is a privilege. Copies of the regulations governing parking on the campus are available in the Cashier's Office. Students should obtain copies each year to assure that they have current regulations.

A thorough understanding of the regulations is important. City of Roanoke traffic tickets will be issued for violation of College parking regulations. Repeated violations will result in disciplinary action which may include removal of campus parking privileges. Where circumstances warrant, the College may have a vehicle removed at the owner's expense.

Student parking on campus is permitted only in the spaces **marked in white**; reserved spaces are marked in yellow.

During late afternoon and evening hours some faculty and reserved spaces are opened to students. When these spaces are used, diligent attention must be paid to the signs posted at the entrance to the lot.

The College assumes no responsibility for the care or protection of any vehicle or

contents at any time it is being operated or is parked on campus.

Handicapped Parking is provided near each building. The College requires persons utilizing handicapped parking spaces to display an authorized permit from the State Division of Motor Vehicles (DMV).



## PART VI

**ACADEMIC REGULATIONS****Credits and Academic Load**

The normal academic course load for students is 15-17 credits. The minimum full-time load is 12 credit hours and the normal maximum full-time load is 18 credits. Students wishing to carry an academic load of more than 18 credits must have the approval of the Coordinator of Admissions and Records who serves as the designee of the Dean of Academic and Student Affairs for this purpose.

- I. Student credit loads of 19 or greater semester hours may be approved under the following circumstances:
  - A. Students have course load of 19 credits including Orientation (STD 100);
  - B. Students with grade point average (GPA) of 3.0 or above may take 19-21 credits;
  - C. Students may take in excess of 18 but never more than 21 credits when recommended by an advisor/counselor if they have demonstrated ability to handle load and special circumstances exist;
  - D. Transient students may take up to 21 credits when recommended by the host college or university.
- II. Upon recommendation by an advisor/counselor, students may be required to take less than the minimum full-time academic load (12 semester hours) if:
  - A. Students are on academic warning or probation;
  - B. Student placement test scores are low and developmental courses are recommended;
  - C. High school graduates with a GPA of 2.0 or less.

**Grading System**

The quality of performance in any academic course is reported by a letter grade, the assignment of which is the responsibility of the instructor. These grades denote the character of study and are assigned quality points as follows:

- A Excellent - 4 grade points per credit

- B Good - 3 grade points per credit
- C Average - 2 grade points per credit
- D Poor - 1 grade point per credit
- F Failure - 0 grade points per credit
- I Incomplete - No credit. Used for unusual circumstances at the discretion of the instructor. Since the "incomplete" extends enrollment in the course, requirements and deadlines for satisfactory completion must be established through student/faculty consultation. Courses for which the grade of "I" has been assigned should be completed as soon as possible and in all cases must be completed by the end of classes of the next semester (excluding summer); otherwise, the "I" grade will be changed to an "F" grade.
- P Pass - Credit earned but not included in grade point average. Applies to non-developmental studies courses, noncredit courses, orientation, and specialized courses and seminars at the discretion of the College. Up to seven (7) credit hours for which the "P" has been awarded may be applied toward completion of a program. A grade of "P" may be used as a grading option with the permission of the division chairman.
- S Satisfactory - No grade point credit; used only for satisfactory completion of a developmental studies course (numbered 01-09).
- R Re-Enroll - No credit. The student is making progress but the course objectives have not been completed; to be used only for developmental studies courses (numbered 01-09). Re-enrollment for the completion of course objectives may be required.
- U Unsatisfactory - No credit. The student has not made satisfactory progress. Applies only to developmental studies courses (numbered 01-09), noncredit courses, orientation, specialized courses, and seminars at the discretion of the College.
- W Withdrawal - No credit. A grade of "W" is awarded to students who withdraw or are withdrawn from a course after the add/drop period but prior to the completion of 60 percent of the session. (Withdrawal deadlines are published in

the *General Catalog* and each term in the *Schedule of Classes*.) Students do not automatically receive a "W" if they stop attending classes. Students must complete a schedule change form and deliver it to the Office of Admissions prior to the end of the drop deadline in order to avoid receiving a grade of "F". After that time, students will receive a grade of "F" if they stop attending class, except under mitigating circumstances, which must be documented. Such requests should be made to the Coordinator of Admissions and Records during the term in which the discontinuation of attendance occurs.

- X Audit - No credit. To audit a course, the student must obtain permission from the appropriate division chairman during the first week of class. Audited courses carry no credit and do not count as part of the student's course load. Students wishing to change status in a course from audit to credit or credit to audit must do so within the add/drop period for the session.

### **Grade Point Average**

The grade point average (GPA) is determined by dividing the total number of grade points earned (A-4, B-3, C-2, D-1, F-0) by the number of credits attempted. Grades of I, P, R, U, S, W, and X are not included in the calculation of GPA.

### **Repeating a Course**

A student should normally be limited to two enrollments in the same credit course. Should the student request to enroll in the same course more than twice, the need must be documented and approved by the Division Chairman and the Dean of Academic and Student Affairs.

If a course is repeated for credit, only the last grade earned is counted toward graduation upon completion of a program. Students should consult with a counselor or faculty advisor before repeating a course for credit. All grades earned for all courses taken one or more times are indicated on the student's permanent record card, but only the last grade earned is used in calculating the student's cumulative grade point average. This policy applies only to courses taken since Fall 1994.

Courses taken prior to summer 1990 and withdrawals are exempt from the repeat course policy.

### **Attendance**

Registration in a course presupposes that students will attend scheduled classes and laboratory sessions. When absence from a class becomes necessary, it is the responsibility of the student to inform the instructor prior to the absence. Frequent unexplained absences may jeopardize the student's grade or may result in dismissal from a course.

The student is responsible for making up all work missed during an absence. If a student cannot take a test or the final examination at the scheduled time, he should contact the instructor prior to the test period. If he is unable to reach the instructor, the division office should be contacted.

The policy on attendance and make-up examinations is generally the prerogative of each instructor. Instructors will provide students with a statement of their attendance policy during the first class meeting.

### **Final Examinations**

All students are expected to take their final examinations at the regularly scheduled times. No exceptions will be made without prior approval of the Instructor and the Dean of Academic and Student Affairs.

### **Grade Reports**

Final grade reports are mailed to the student after the end of each semester. Final grades are a part of the student's record and are recorded on the student's permanent report. Errors should be reported to the Records Office within six weeks of the end of the semester in which the grade was given. Normally, a change of grade(s) cannot take place after the semester following the issuance of the grade.

### **High School Transcripts**

Curricular students, students who enroll within one year from their high school graduation, and students who do not indicate their intent to be noncurricular must provide high school transcripts. When the college recognizes that the high school transcript is of no value for college or

curricular admission, the transcript may be waived.

### **Transcripts from Other Colleges**

Students previously enrolled at any other college will be required to provide transcripts unless the application clearly indicates the student's desire to be noncurricular.

Students will be admitted to a curriculum after meeting all curriculum admissions criteria. Students may enroll through the add period; because of this, students may be allowed to proceed through the admissions process without waiting for transcripts. If students have not provided all undergraduate transcripts (graduate transcripts should be provided if students want them considered for transfer credit) by the end of the fourth week of the semester, they will be notified that failure to provide required transcripts by the end of the eighth week will cause an administrative hold to be placed on their file. The hold will do the following: (1) students will be made noncurricular, (2) transcripts and grades will not be released, and (3) financial aid, veterans benefits, and other assistance could be adversely affected.

No currently enrolled nondegree student may be reclassified as a degree-seeking student until all postsecondary undergraduate transcripts have been provided.

### **Academic Honors**

At the end of each semester, the Dean's List is prepared, recognizing all regular full-time students who earned a grade point average between 3.2 and 3.4. Regular full-time students who earned a grade point average of 3.5 or better are placed on the President's Honor Roll. The College is not responsible for newspaper publicity of these lists.

Students who have attended a VCCS community college for a minimum of 30 semester hours may be eligible for graduation honors. Appropriate honors based on the overall academic achievement at Virginia Western Community College are as follows:

- 3.2 Cum laude (with honor)
- 3.5 Magna cum laude (with high honor)

- 3.8 Summa cum laude (with highest honor)

HONOR SOCIETY – Phi Eta is Virginia Western's local chapter of Phi Theta Kappa, an international honor society which recognizes and encourages scholarship among two-year college students. It provides opportunity for the development of leadership and service, for an intellectual climate for exchange of ideas and ideals, for lively fellowship for scholars, and for stimulation of interest in continuing academic excellence. Invitations to join are extended to full- and part-time associate degree students who display academic excellence. Full-time degree students who have completed 12 credits must have a grade point average of 3.5 or better and part-time degree students must have earned 24 or more credit hours and have a 3.5 average or better. Invitations are usually extended in January.

### **Academic Standing**

The College keeps students informed of their academic standing. A statement will be placed on their Grade Report if they are academically deficient and when they have regained good academic standing. Students are expected to maintain a 2.0 (C) grade point average to be making normal academic progress toward graduation.

**ACADEMIC WARNING** – Any student who fails a course or who fails to attain a minimum grade point average of 2.0 for any semester will receive an "Academic Warning."

**ACADEMIC PROBATION** – Students who fail to maintain a cumulative grade point average of 1.50 will be on academic probation until such time as their cumulative average is 1.50 or better. The statement "Academic Probation" will be placed on their permanent records. Generally, a student on probation is ineligible for appointive or elective office in student organizations unless special permission is granted by the Dean of Academic and Student Affairs or another appropriate College administrator. Students usually will be required to carry fewer credits than normal the following semester. Students on academic probation are required to consult with their counselors. Students shall be placed on probation only

after they have attempted 12 semester credit hours.

**ACADEMIC SUSPENSION** – Students on academic probation who fail to attain a grade point average of 1.50 will be placed on suspension only after they have attempted 24 semester credit hours. Academic suspension normally will be for one semester unless the student reapplies and is accepted for readmission to another curriculum of the College. The statement “Academic Suspension” will be placed on the student's permanent record. Students who have been informed that they are on academic suspension may submit an appeal in writing to the Chairman of the Admissions Committee for reconsideration of their cases. Suspended students may be readmitted after termination of the suspension period and upon formal written petition to the Chairman of the Admissions Committee.

**ACADEMIC DISMISSAL** – Students who do not maintain at least a 2.0 grade point average for the semester of reinstatement to the College when on academic suspension will be academically dismissed. Students who have been placed on academic suspension and achieve a 2.0 grade point average for the semester of their reinstatement must maintain at least a 1.50 grade point average in each subsequent semester of attendance. Students remain on probation until their cumulative grade point average is raised to a minimum of 1.50. Failure to attain a cumulative 1.50 grade point average in each subsequent semester until the cumulative GPA reaches 1.50 will result in academic dismissal. Academic dismissal normally is permanent unless, with good cause, students reapply and are accepted under special consideration for readmission by the Admissions Committee of the College. The statement “Academic Dismissal” will be placed on the student's permanent record.

The College reserves the right to place students on academic probation or academic suspension where circumstances warrant.

### **Suspension for Lack of Progress**

Two or more consecutive terms of withdrawal from all classes without successful completion of any credit courses may subject a student to academic probation and/or suspension.

### **Academic Advising**

Initial freshman advising ordinarily is done by a counselor; however, each student in a curriculum of study is assigned to a faculty advisor consistent with the student's program of study. The faculty advisor will assist the student in selecting proper courses, interpreting curriculum requirements, and assessing academic progress. Advising days are scheduled during early registration periods or other announced times; however, students are encouraged to confer with their advisors on a regular basis during office hours.

### **Transfer Module**

The transfer module is a coherent set of courses that forms the foundation of a solid liberal education for college students. The transfer module serves as an advising tool for students who begin at a community college without a clear sense of their future educational goals, who are uncertain about where they will seek admission to a baccalaureate program, or who choose to transfer without completing the associate degree. Students should consult a counselor about specific requirements, especially as they relate to mathematics and science requirements.

### **Catalog Year for Graduation**

Effective Fall 1992, all students must graduate under a semester catalog. Credits earned at Virginia Western under the quarter system, prior to 1988, may be substituted for equivalent semester requirements. Students who maintain continuous enrollment under the semester system may elect to graduate under their first semester catalog or the current catalog. Students who do not maintain continuous enrollment (i.e., nonenrolled for two or more consecutive semesters) must graduate under the catalog year of re-enrollment or the current catalog.

## PART VII

**PROGRAMS OF STUDY AND GRADUATION REQUIREMENTS****Degrees and Certificates**

The College offers the following degrees, certificates, or career studies certificates for students who successfully complete approved programs at the College.

1. **DEGREE PROGRAM** – A planned program of study composed of a minimum of 65 semester hours at the 100 and 200 course levels which culminate in a degree.

**Degree** - An award at the associate level that represents completion of the requirements of a degree program.

**Major** - A collection of courses that are necessary to meet the requirements of the degree program under which the major is classified.

**Specialization** - Variation from parent major by 12-18 credit hours in the major area.

Associate in Arts Degree (AA) is awarded to students majoring in the Liberal Arts. Students receiving an AA degree generally transfer to four-year colleges or universities.

Associate in Science Degree (AS) is awarded to students majoring in such specialized curricula as Business Administration, Engineering, Education, and Science. Students receiving an AS degree generally transfer to four-year colleges or universities.

Associate in Applied Science Degree (AAS) is awarded to students majoring in an occupational-technical curriculum. Students receiving an AAS degree may elect to pursue immediate employment or transfer to selected four-year colleges or universities.

2. **CERTIFICATE PROGRAM** – A program of study of fewer than two years in length with a major in an occupational area with a minimum of 30 credit hours that may include courses numbered 10-299.

3. **CAREER STUDIES PROGRAM** – A program of study of less than one year in length in an occupational area (fewer than 30 credit hours) that may include courses numbered 10-299).

**List of Programs****Associate in Arts (AA)**

Liberal Arts  
Fine Arts

**Associate in Science (AS)**

Business Administration  
Education  
Engineering  
General Studies  
Science  
Computer Science  
Health Sciences

**Associate in Applied Science (AAS)**

Accounting  
Administration of Justice  
Architectural Technology  
Civil Engineering Technology  
Commercial Art  
Computer Information Systems  
Dental Hygiene  
Early Childhood Development  
Electrical/Electronics Engineering Technology  
Horticulture Technology  
Interior Landscaping/Floriculture Option  
Landscape Option  
Legal Assisting  
Management  
Banking and Finance  
Merchandising  
Real Estate  
Mechanical Engineering Technology  
Mental Health  
College Transfer Track  
Clinical Track  
Nursing  
Office Systems Technology  
Administrative Assistant  
Legal Secretary  
Medical Secretary

Radio and Television Production  
 Radiography  
 Railroad Operations (**Pending Approval**)

**Certificate Programs**

Air Conditioning and Refrigeration  
 Architectural Drafting  
 Child Care  
 Clerical Studies  
 Legal Assistant  
 Medical Transcriptionist  
 Welding

**Career Studies Programs**

Air Conditioning and Refrigeration  
 Architectural Drafting  
 Business Industrial Supervision  
 Civil Technology/Surveying  
 Early Childhood Development  
 Education Secretary  
 Electrical Wiring  
 Electronic Servicing  
 Environmental Science and Technology  
 Fire Fighting and Prevention  
 Floral Design and Indoor Plant Care  
 Food Service Management  
 Industrial Technology  
 Landscaping and Outdoor Plant Care  
 Microcomputer Studies  
 Nurse Aide  
 Occupational Safety  
 Plant Propagation and Production  
 Real Estate  
 Sign Language  
 Word Processing

**Graduation Requirements**

The college shall ensure that students who receive associate degrees, or certificates shall have completed the established graduation requirements that follow:

**Associate Degree.** To be eligible for graduation with an associate degree from the college, students must:

- A. have fulfilled all of the course and credit-hour requirements of the degree curriculum with at least twenty-five

percent of the total semester hours acquired at Virginia Western;

- B. have been certified by an appropriate college official for graduation;
- C. have earned a grade point average of at least 2.0 in all studies attempted which are applicable toward graduation in their curricula;
- D. have filed an application for graduation in the Records Office;
- E. have resolved all financial obligations to the college and returned all library and college materials.

**Certificate.** To be eligible for graduation with a certificate from the college, students must have:

- A. fulfilled all of the course and credit-hour requirements of the curriculum as specified in the college catalog with 25 percent of the credits acquired at Virginia Western;
- B. been certified by an appropriate college official for graduation;
- C. earned a grade point average of 2.0 in all studies attempted which are applicable toward graduation in their curricula;
- D. filed an application for graduation in the Records Office;
- E. resolved all financial obligations to the college and returned all library and other college materials.

**Career Studies.** A program of study of less than one year in length in an occupational area (fewer than 30 credit hours) that may include courses numbered 10-299.

**Participation in Commencement**

All graduating students are expected to participate in the annual commencement ceremony held at the end of the spring semester. Students who wish to be excused from commencement must submit a written request to the college president stating the reason why they will be unable to attend.

**Outcomes Assessment Requirement**

Students may be required to take one or more tests designed to measure general education achievement and/or achievement



in selected major areas prior to graduation for the purpose of evaluation of academic programs. No minimum score or level of achievement is required for graduation. Test results will remain confidential and will be used for the sole purpose of improvement of the College.

### **General Education**

The importance of providing every graduate with a strong background in general education is reflected in both the structure and content of the associate degree programs at Virginia Western Community College. Programs typically devote twenty-five percent or more of the credits required for graduation to the study of general education courses, including at least one course from each of the following areas: humanities/fine arts, social/behavior sciences, natural sciences/mathematics, and health/physical education. These general education courses, together with specialized courses in the major field, orientation sessions, and extracurricular activities, are designed to provide each graduate with a collegiate experience which supports the development of the following general education goals:

**Communication:** Proficiency in the areas of listening, speaking, reading, and writing.

**Learning Skills:** Skills to locate and use information resources; ability to apply methods of inquiry; attitudes which support life-long learning.

**Critical Thinking:** The ability to evaluate and analyze information, events, and problems; skills in developing interpretations, inductive and deductive generalizations, causal explanations, and conclusions.

**Interpersonal Skills and Human Relations:** Knowledge of self; understanding of ethics, social responsibilities, and personal values; skills to recognize different perspectives and cultural values; skills to interact effectively with others; skills and attitudes that promote success in life.

**Computational and Computer Skills:** Skills to understand and interpret numerical data; skills to manipulate data in a logical way; knowledge of basic

computer elements, functions, and applications.

**Understanding Culture and Society:** Attitudes and values which promote citizenship; knowledge of social, economic, and political institutions; historical consciousness and a global perspective; awareness and appreciation for artistic forms of expression.

**Understanding Science and Technology:** Knowledge of fundamental principles of science and technology; ability to make reasoned judgements based on these principles; awareness of impact of science and technology on society.

**Wellness:** Attitudes, values, and skills which promote life-long physical and emotional well-being.

### **Computer Literacy**

The world is a rapidly changing community requiring a basic knowledge of the computer in every day life. Today's technologies require computer applications in education, business, and industry. If our society is to function effectively in such an environment, it behooves us to have a working knowledge of computers and computer application. Virginia Western Community College has endorsed the principle of computer literacy for all students. Effective with the 1992 fall semester, all new associate degree students must demonstrate proficiency in the following competencies of computer literacy prior to graduation:

- A. The ability to understand the use of a computer.
- B. A working knowledge of computer hardware and technology.
- C. The ability to discriminate between problems that can and problems that cannot be appropriately solved on a computer.
- D. A reasonable proficiency in the understanding of computer software usage.
- E. The ability to use the computer for accomplishing educational and career tasks.

To fulfill the graduation requirement for computer literacy, a student must

successfully complete one of the following options:

- A. Complete one of the courses below. At least one of these courses is included as a requirement in every associate degree program at VWCC:

ACC 215

ART 281

BCS 227

CIS 110, 116, 150, 199

CSC 110, 201

DRF 201

EGR 100, 120, 125, 127

MTH 241

OFT 115, 216, 251

RAD 245

- B. Request approval from the division chairman to waive the course requirement cited above on the basis of previous computer experience. If waiver is granted, no credits are awarded and the student must complete the total number of credits required for graduation in the program.
- C. Obtain approval from the division chairman to substitute a course for one of the required courses shown above. The course being substituted must include computer applications and use as part of the course requirements.

### **Program Competencies**

*The AS and AA degree programs* are designed for students who plan to transfer to a four-year college or university to complete a baccalaureate degree. Upon completion of an AA or AS program, the graduate should have:

1. the broad general education knowledge and skills required of all associate degree students at VWCC.
2. the computer literacy competencies required of all associate degree students at VWCC.
3. the educational knowledge and skills resulting from completing a core of major courses which will provide support for the student's transfer goals.

4. the course work needed to transfer, as an upper-level student, to a four-year college or university with little or no loss of credit.
5. the academic background and study skills needed to succeed after transferring to a baccalaureate program.

*The AAS degree programs* are designed to prepare students for direct entry into the job market in technical and paraprofessional fields. A few of the programs also prepare students to transfer to selected baccalaureate degree programs. Upon completion of an AAS degree program, the graduate should have:

1. the broad general education skills and knowledge required of all associate degree students at VWCC.
2. the computer literacy competencies required of all associate degree students at VWCC.
3. the educational background and occupational training necessary for immediate employment.
4. the skills and knowledge needed to perform satisfactorily on the job.
5. the course work necessary to transfer to and succeed in baccalaureate degree programs which accept transfer students from technical degree programs.

*The certificate programs* are designed to prepare students for direct entry into the job market as technicians, skilled, and semi-skilled workers. Upon completion of a certificate program, the graduate should have:

1. a minimal background in general education.
2. the educational background and occupational training necessary for immediate employment.
3. the skills and knowledge needed to perform satisfactorily on the job

*The career studies programs* are designed to prepare students for direct entry into the job market in occupational fields which require minimal entry-level skills and knowledge. Some of the programs also

provide persons already employed with an opportunity to upgrade their skills and knowledge. Upon completion of a career studies program, the graduate should have:

1. minimal entry-level skills and knowledge needed for immediate employment in selected fields.
2. the skills and knowledge needed to perform satisfactorily on the job.
3. up-to-date knowledge and skills in a designated occupational area.

**Minimum Requirements for Associate Degree**

**Associate in Arts (AA)  
Associate in Science (AS)  
Associate in Applied Science (AAS)**

General Education:	Minimum Number of Semester Hour Credits		
	(1)	(2)	(3)
	AA	AS	AAS
I. English Composition	6	6	3
II. Humanities/Fine Arts	6	6	0
Foreign Language	8	0	0
III. Social/Behavioral Sciences	12	9 <sup>b</sup>	6 <sup>a</sup>
IV. Natural Sciences/	8	8	0
Mathematics	6	6 <sup>c</sup>	0
V. Wellness	2 <sup>d</sup>	2 <sup>d</sup>	2 <sup>d</sup>
Minimum General Education Total =	<b>48</b>	<b>37</b>	<b>17</b>
Other Requirements for Associate Degrees:			
VI. Student Development	1	1	1
VII. Major field courses and electives (columns 1-2)	16 <sup>e</sup>	27 <sup>e</sup>	47 <sup>e</sup>
Occupational/technical courses (column 3)			
Minimum Total for Degree =	<b>65</b>	<b>65</b>	<b>65</b>

*Notes: Within the frame work of minimum degree requirements above, students must acquire basic competencies in the use of computers.*

- <sup>a</sup> While general education courses other than those designed for transfer may be used to meet portions of these requirements, these courses must be general in nature and not narrowly focused on those skills, techniques, and procedures peculiar to a particular occupation or profession.
- <sup>b</sup> Only 6 semester hours of social/behavioral sciences are required for engineering majors who plan to transfer to a baccalaureate degree engineering program that requires 6 or fewer hours in this category, provided that the college/university publishes such requirements in its transfer guide.
- <sup>c</sup> Only 3 semester hours of mathematics are required for the General Studies major.
- <sup>d</sup> Health, physical education, or recreation courses which promote physical and emotional well being.
- <sup>e</sup> Every program must provide for at least one unspecified elective course chosen from disciplines outside the student's area of specialization. Students are urged to acquaint themselves with the requirements of the major department in the college or university to which transfer is contemplated and further to consult with the faculty advisor or Counseling Department in planning their program and selecting electives.

**Approved List of Transfer Electives****A.A. and A.S. Degrees**

The purpose of this list of courses is to assist students in scheduling classes leading to an Associate in Arts (A.A.) or Associate in Science (A.S.) degree. All electives are to be taken from the courses listed below. Divisional approval is required for any deviation from this list. Students should check the semester schedule of classes to ensure that prerequisites have been met before registering for any course. Electives should be selected carefully in conjunction with a faculty advisor or counselor after examining the requirements at the transfer institution.

**Transfer Electives****Business Electives**

ACC 211-212  
CIS 150

**Humanities Electives**

\*ART 101-102  
\*ENG 241-242, 243-244  
FRE 101-102, 201-202  
GER 101-102, 201-202  
\*HUM 201-202  
\*MUS 121-122  
PHI 101-102  
SPA 101-102, 201-202

**Social Science Electives**

ECO 201-202  
GEO 200, 210  
\*HIS 101-102, 121-122  
\*PLS 211-212  
PSY 201-202  
PSY 231-232  
\*SOC 201-202

**Math and Science Electives**

BIO 101-102, 205, 215, 226, 256, 265, 277  
CHM 111-112, 241-242  
CSC 110, 201-202, 205, 206  
\*GOL 105-106  
MTH 157, 175, 176, 177, 178, 271-272, 277, 291  
NAS 131-132  
PHY 201-202, 241-242

**Health and Physical Education Electives**

HLT 110  
PED Courses

*\*Either course in this two-semester sequence may be taken first.*

**ACCOUNTING**

*ASSOCIATE IN  
APPLIED SCIENCE DEGREE  
203*

**Purpose:** The curriculum is designed for persons who seek full-time employment in the Accounting field.

**Occupational Objectives:** Technician, or trainee in accounting, auditing, or management.

**Curriculum Admission Guidelines:**

Minimum of two units of high school mathematics, one of which must be algebra or the equivalent and proficiency in high school English. Developmental courses will be recommended for students with deficiencies in English and mathematics.

<b>Accounting Curriculum</b>				
<b>Course Number</b>	<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
ACC 211	Principles of Accounting I	3	0	3
ACC 213	Principles of Accounting Lab I	0	2	1
ECO 201	Principles of Economics I	3	0	3
ENG 111	College Composition I	3	0	3
MTH 120	Introduction to Mathematics (or MTH 163)	3	0	3
OFT 115	Keyboarding for Computer Usage (or OFT 111)	3	0	3
STD 100	Orientation	<u>1</u>	<u>0</u>	<u>1</u>
	Total .....	16	2	17
<b>Second Semester</b>				
ACC 212	Principles of Accounting II	3	0	3
ACC 214	Principles of Accounting Lab II	0	2	1
BUS 125	Applied Business Mathematics (or MTH 271)	3	0	3
CIS 150	Introduction to Microcomputer Software	3	0	3
ECO <sup>1</sup> 202	Principles of Economics II	3	0	3
SPD 105	Oral Communication (or SPD 100)	3	0	3
HLT <sup>2</sup> 110	Concepts of Personal and Community Health (or PED Elective)	<u>2</u>	<u>0</u>	<u>2</u>
	Total .....	17	2	18
<b>Second-Year Curriculum</b>				
<b>Third Semester</b>				
ACC 223	Intermediate Accounting I	4	0	4
ACC 231	Cost Accounting I	3	0	3
ACC 261	Principles of Federal Taxation	3	0	3
BUS 225	Applied Business Statistics	3	0	3
BUS 241	Business Law I	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	16	0	16

## Fourth Semester

ACC	215	Computerized Accounting	3	0	3
ACC	224	Intermediate Accounting II	4	0	4
MKT	100	Principles of Marketing (or BUS 100 or BUS 150)	3	0	3
FIN	215	Financial Management	3	0	3
E <sup>3</sup>		Elective	<u>3</u>	<u>0</u>	<u>3</u>
		Total .....	16	0	16
Total Minimum Credits for Degree .....					67

<sup>1</sup> An elective may be substituted for ECO 202; the elective must be selected from history, political science, psychology, sociology or social science.

<sup>2</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

<sup>3</sup> Elective may be any 100 or above level course outside of major field.

## ADMINISTRATION OF JUSTICE

### ASSOCIATE IN APPLIED SCIENCE DEGREE 400

**Purpose:** This curriculum has two primary purposes: (1) to prepare the student for careers in the Criminal Justice field, and (2) to provide the first two years academic foundation for transfer into a four-year liberal arts or professional degree program in the discipline. The courses are particularly attractive to non-majors as interesting electives in a subject matter that is concern to all. The program is especially enriched by course offerings taught by professionals in Police, Court, and Correctional agencies.

**Occupational Objectives:** The curriculum is designed to aid those seeking careers (or seeking advancement in careers) in:

Law Enforcement (Local, State, Federal)

Private and Public Security

Law (paralegal, prosecution/defense attorney, judge, court administration)

Corrections (Jail/Prison and community based agencies, probation/parole, and rehabilitation program staff)

Juvenile Justice (counseling, casework)

**Educational Objectives:** The curriculum is designed for maximum transferability from Virginia Western to four-year institutions that have baccalaureate degree programs in Administration of Justice, Criminal Justice, Criminology, Law Enforcement, Police Science, and Public Service. Most of these four-year degree programs are Social Science oriented, which is the orientation of this curriculum; and it easily merges with pre-

law programs at most four-year institutions as well. A number of the careers listed under Occupational Objectives above will require a four-year degree, so it is essential that students consult early with the Program Head concerning career and academic goals. A career entrance program of courses is offered as well as a college transfer program.

**Curriculum Admission Guidelines:**

Proficiency in high school English and Algebra I for the career track; Algebra I, Algebra II and Geometry are prerequisites for the transfer track. Development courses may be recommended for students with deficiencies in English and mathematics.

**Virginia State Police Academy**

**Articulation Agreement:** Graduates of the Virginia State Police Academy will be awarded 18-21 semester hours credit toward the graduation requirements in the Administration of Justice programs. The award of 18-21 credits shall be contingent upon continued in-service training as a member of the Virginia State Police (or service until retirement) following successful completion of the Academy. Academy graduates who terminate service with the Virginia State Police and subsequently request consideration under this agreement shall be eligible for only 15 semester hours credit, unless equivalent in-service training can be demonstrated. Local police academy graduates also may be awarded credit toward graduation requirements in this program.

**Administration of Justice Curriculum  
(Career Track)**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
ADJ <sup>1</sup> 100	Survey of Criminal Justice	3	0	3
ADJ 107	Survey of Criminology	3	0	3
ADJ	Administration of Justice Elective	3	0	3
CIS 150	Introduction to Microcomputer Software	3	0	3
ENG 101	Practical Writing I	3	0	3
HLT <sup>2</sup> 110	Concepts of Personal and Community Health	2	0	2
STD 100	Orientation	<u>1</u>	<u>0</u>	<u>1</u>
	Total .....	18	0	18
<b>Second Semester</b>				
ADJ 105	The Juvenile Justice System	3	0	3
ADJ <sup>1</sup> 227	Constitutional Law for Justice Personnel	3	0	3
ADJ	Administration of Justice Elective	3	0	3
ENG 102	Practical Writing II	3	0	3
MTH 120	Introduction to Mathematics (or MTH 151)	3	<u>0</u>	<u>3</u>
	Total .....	15	0	15
<b>Second-Year Curriculum</b>				
<b>Third Semester</b>				
ADJ <sup>1</sup> 211	Criminal Law, Evidence and Procedures I	3	0	3
ADJ <sup>3</sup>	Administration of Justice Elective	0-3	0	0-3
ADJ <sup>3</sup>	Administration of Justice Elective	3	0-3	3-4
E	Elective	3	0	3
PLS 211	United States Government I	3	0	3
PSY 120	Human Relations	3	0	3
	Total .....	15-18	0-3	16-18
<b>Fourth Semester</b>				
ADJ <sup>1</sup> 212	Criminal Law, Evidence and Procedures II	3	0	3
ADJ <sup>3</sup>	Administration of Justice Elective	3	0-3	3-4
ADJ	Administration of Justice Elective	3	0	3
E	Elective	3	0	3
PLS 212	United States Government II	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	15	0-3	15-16
Total Minimum Credits for Career Track Degree .....				65

<sup>1</sup> ADJ 100-227 and ADJ 211-212 offered on alternate year basis; student should enroll in whichever course sequence currently offered.

<sup>2</sup> Two Credits of Health (HLT) or Physical Education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

<sup>3</sup> In Career Track: If ADJ 171-172 (4 credit hours each) are taken, delete one ADJ elective (3 credit hours).

**NOTE:** Selection of electives and/or substitution of courses for any of the above requirements must be approved by ADJ program head before enrolling in courses.

**Administration of Justice Curriculum  
(Transfer Track)**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
ADJ <sup>1</sup> 100	Survey of Criminal Justice	3	0	3
ADJ 107	Survey of Criminology	3	0	3
ADJ	Administration of Justice Elective	3	0	3
CIS 150	Introduction to Microcomputer Software	3	0	3
ENG 111	College Composition I	3	0	3
HLT <sup>2</sup> 110	Concepts of Personal and Community Health	2	0	2
STD 100	Orientation	<u>1</u>	<u>0</u>	<u>1</u>
	Total .....	18	0	18
<b>Second Semester</b>				
ADJ 105	The Juvenile Justice System	3	0	3
ADJ <sup>1</sup> 227	Constitutional Law for Justice Personnel	3	0	3
ADJ	Administration of Justice Elective	3	0	3
ENG 112	College Composition II	3	0	3
SPD 100	Principles of Public Speaking	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	15	0	15
<b>Second-Year Curriculum</b>				
<b>Third Semester</b>				
ADJ <sup>1</sup> 211	Criminal Law, Evidence and Procedures I	3	0	3
E <sup>3</sup>	Science Elective	3	3	4
MTH 151	Mathematics for the Liberal Arts I	3	0	3
PLS 211	United States Government I	3	0	3
PSY 201	Introduction to Psychology I	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	15	3	16
<b>Fourth Semester</b>				
ADJ <sup>1</sup> 212	Criminal Law, Evidence and Procedures II	3	0	3
E	Elective	3	0	3
E <sup>3</sup>	Science Elective	3	3	4
MTH 152	Mathematics for the Liberal Arts II	3	0	3
PLS 212	United States Government II	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	15	3	16
Total Minimum Credits for Transfer Track Degree .....				65

<sup>1</sup> ADJ 100-227 and ADJ 211-212 offered on alternate year basis; student should enroll in whichever course sequence currently offered.

<sup>2</sup> Two Credits of Health (HLT) or Physical Education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

<sup>3</sup>In Transfer Track: ADJ 171-172 transfers to SOME four-year institutions; a two-semester sequence of Natural Science (Biology, Chemistry, Geology, Physics) should be taken if student is unsure of transfer institution.

NOTE: Selection of electives and/or substitution of courses for any of the above requirements must be approved by ADJ program head before enrolling in courses.



**AIR CONDITIONING AND REFRIGERATION**

*(Career Studies)*  
015

**Purpose:** The career studies program in Air Conditioning and Refrigeration is designed to meet the short-term training needs of the adult part-time student by presenting the essential technical concepts and practices of the air conditioning and refrigeration field. The broad goals of the AIRC certificate program apply to this program as well. All of the courses offered through this program may be applied toward the certificate in Air Conditioning and Refrigeration.

**Occupational Objectives:** Air conditioning system installer; air conditioning system service technician.

**Curriculum Admission Guidelines:** Proficiency in high school English and general mathematics. Developmental courses will be recommended for students with deficiencies in English and mathematics.

<b>Air Conditioning and Refrigeration Curriculum</b>					
<b>Course Number</b>		<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
<b>First-Year Curriculum</b>					
<b>First Semester</b>					
AIR 121		Air Conditioning and Refrigeration I	2	2	3
ELE 133		Practical Electricity I	<u>2</u>	<u>2</u>	<u>3</u>
		Total .....	4	4	6
<b>Second Semester</b>					
AIR 122		Air Conditioning and Refrigeration II	2	2	3
ELE 134		Practical Electricity II	<u>2</u>	<u>2</u>	<u>3</u>
		Total .....	4	4	6
<b>Second-Year Curriculum</b>					
<b>Third Semester</b>					
AIR 123		Air Conditioning and Refrigeration III	2	2	3
BLD 111		Blueprint Reading & the Building Code	<u>2</u>	<u>2</u>	<u>3</u>
		Total .....	4	4	6
<b>Fourth Semester</b>					
AIR 124		Air Conditioning and Refrigeration IV	2	2	3
WEL 120		Fundamentals of Welding	<u>1</u>	<u>3</u>	<u>2</u>
		Total .....	3	5	5
Total Minimum Credits for Certificate .....					23

**AIR CONDITIONING AND REFRIGERATION**

(Certificate)  
903

**Purpose:** Throughout our region (and the nation) there is a continuous need for skilled people to install and service a growing number of commercial, industrial, and home air conditioning systems. The air conditioning and refrigeration program is designed to prepare graduates for full-time employment in the installation, maintenance, and repair of air conditioning and refrigeration equipment.

The certificate program is offered on a part-time evening schedule and is intended for beginners as well as those currently working in the field. Necessary courses in related

technical areas as well as business and economics are included in the program.

**Occupational Objectives:** Air conditioning system installer; air conditioning system service technician; air conditioning sales; Heating, Ventilation, and Air Conditioning Estimator.

**Curriculum Admission Guidelines:** Proficiency in high school English and general mathematics. Developmental courses will be recommended for students with deficiencies in English and mathematics.

<b>Air Conditioning and Refrigeration Curriculum</b>					
Course Number		Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>					
<b>First Semester</b>					
AIR 121		Air Conditioning and Refrigeration I	2	2	3
STD 100		Orientation	1	0	1
ELE 133		Practical Electricity I	<u>2</u>	<u>2</u>	<u>3</u>
		Total .....	5	4	7
<b>Second Semester</b>					
AIR 122		Air Conditioning and Refrigeration II	2	2	3
ELE 134		Practical Electricity II	<u>2</u>	<u>2</u>	<u>3</u>
		Total .....	4	4	6
<b>Second-Year Curriculum</b>					
<b>Third Semester</b>					
AIR 123		Air Conditioning and Refrigeration III	2	2	3
BLD 111		Blueprint Reading & the Building Code	<u>2</u>	<u>2</u>	<u>3</u>
		Total .....	4	4	6
<b>Fourth Semester</b>					
AIR 124		Air Conditioning and Refrigeration IV	2	2	3
WEL 120		Fundamentals of Welding	<u>1</u>	<u>3</u>	<u>2</u>
		Total .....	3	5	5
<b>REQUIRED COURSES THAT MAY BE TAKEN ANY SEMESTER:</b>					
BUS 165		Small Business Management	3	0	3
E		Elective	3	0	3
ENG 101		Practical Writing I	<u>3</u>	<u>0</u>	<u>3</u>
		Total .....	9	0	9
Total Minimum Credits for Certificate .....					33

**ARCHITECTURAL DRAFTING**

(Career Studies)  
008

**Purpose:** This curriculum is designed to prepare students for entry-level positions in drafting or to upgrade the skills of those currently employed in technical drafting. This program offers the technical core of the certificate program in Architectural Drafting, without requiring the general education subjects. All of the courses offered through

this program may be applied toward the certificate in Architectural Drafting.

**Occupational Objectives:** Entry-level positions in the drafting field.

**Curriculum Admission Guidelines:** A high school diploma, GED, or the equivalent is recommended.

<b>Architectural Drafting Curriculum</b>					
Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits	
<b>First-Year Curriculum</b>					
<b>First Semester</b>					
ARC 111	Introduction to Architectural Drafting I	1	6	3	
CIV 130	Construction Planning	<u>3</u>	<u>0</u>	<u>3</u>	
	Total .....	4	6	6	
<b>Second Semester</b>					
ARC 112	Introduction to Architectural Drafting II	1	6	3	
ARC 130	Introduction to Materials and Methods of Construction	<u>4</u>	<u>0</u>	<u>4</u>	
	Total .....	5	6	7	
<b>Second-Year Curriculum</b>					
<b>Third Semester</b>					
ARC 233	Advanced Architectural Drafting III	1	4	3	
DRF 201	Computer Aided Drafting and Design I	<u>1</u>	<u>3</u>	<u>2</u>	
	Total .....	2	7	5	
<b>Fourth Semester</b>					
ARC 234	Advanced Architectural Drafting IV	1	4	3	
E <sup>1</sup>	Approved Technical Elective	2-3	<u>0</u>	2-3	
	Total .....	3-4	4	5-6	
Total Minimum Credits for Certificate.....				23	

<sup>1</sup> Technical elective to be selected with departmental approval and may be taken any semester.

## ARCHITECTURAL DRAFTING

(Certificate)  
930

**Purpose:** This program is designed to provide applied technical drafting knowledge and skills with specialization in the field of architectural drafting. The curriculum is primarily intended to train persons for full-time employment. In addition to technical courses, there are supporting courses in communications, mathematics, and social science. These courses serve to broaden the student's general education background and thus better prepare him or her for employment and advancement in this career

area. All of the courses offered through this program may be applied toward the AAS degree in Architectural Technology.

**Occupational Objectives:** Architectural aide; architectural draftsman.

**Curriculum Admission Guidelines:** Proficiency in high school English and mathematics (1 unit of Algebra). Developmental courses may be recommended for students with deficiencies in English and mathematics.

### Architectural Drafting Curriculum

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
ARC 111	Introduction to Architectural Drafting I	1	6	3
STD 100	Orientation	1	0	1
CIV 130	Construction Planning	<u>3</u>	0	<u>3</u>
	Total .....	5	6	7
<b>Second Semester</b>				
ARC 112	Introduction to Architectural Drafting II	1	6	3
ARC 130	Introduction to Materials and Methods of Construction	<u>4</u>	<u>0</u>	<u>4</u>
	Total .....	5	6	7
<b>Second-Year Curriculum</b>				
<b>Third Semester</b>				
ARC 233	Advanced Architectural Drafting III	1	4	3
DRF 201	Computer Aided Drafting and Design I	<u>1</u>	<u>3</u>	<u>2</u>
	Total .....	2	7	5
<b>Fourth Semester</b>				
ARC 234	Advanced Architectural Drafting IV	1	4	3
E <sup>1</sup>	Approved Technical Elective	2	0	2
	Total .....	3	<u>4</u>	5
Additional Required Courses		14	0	14
Total Minimum Credits for Certificate.....				38
<b>ADDITIONAL REQUIRED COURSES THAT MAY BE TAKEN ANY SEMESTER:</b>				
ENG/SPD	English or Speech	3	0	3
E <sup>2</sup>	Social Science Sequence	6	0	6
MTH3 103	Applied Technical Mathematics I	3	0	3
MTH 105	Survey of Technical Mathematics I	<u>2</u>	<u>0</u>	<u>2</u>
	Total .....	14	0	14

<sup>1</sup>Technical elective to be selected with department approval.

<sup>2</sup>A two-semester sequence is recommended for students planning to transfer to a baccalaureate degree program.

<sup>3</sup>MTH 113 can be taken in lieu of MTH 103-105.

**ARCHITECTURAL TECHNOLOGY**

*ASSOCIATE IN  
APPLIED SCIENCE DEGREE  
901*

**Purpose:** This program is designed to prepare qualified technicians for career opportunities in the architectural and building construction industries. Graduates may seek immediate employment or transfer to Bachelor of Technology programs at certain four-year colleges and universities. Students in this curriculum receive in-depth instruction and practice in the planning, design and preparation of architectural drawings for a variety of projects. In addition, the program includes courses in solar energy, materials and methods of construction, structural design, construction planning, estimating, and other topics

relevant to the architectural and building construction industries.

**Occupational Objectives:** Varied opportunities in architectural offices, with building contractors and with industries related to the architectural and construction fields.

**Curriculum Admission Guidelines:** Proficiency in high school English and 3 units of mathematics (2 units of algebra and 1 unit of geometry or trigonometry). Developmental courses may be recommended for students with deficiencies in English and mathematics.

**Architectural Technology Curriculum**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
ARC 100	Introduction to Architecture	3	0	3
ARC 111	Introduction to Architectural Drafting I	1	6	3
CIV 130	Construction Planning	3	0	3
EGR 100	Engineering Technology Orientation	0	2	1
ENG 111	College Composition I	3	0	3
MTH 113	Engineering Technical Mathematics I	5	0	5
STD 100	Orientation	<u>1</u>	<u>0</u>	<u>1</u>
	Total .....	16	8	19
<b>Second Semester</b>				
ARC 112	Introduction to Architectural Drafting II	1	6	3
ARC 130	Introduction to Materials and Methods of Construction	4	0	4
ARC 150	Introduction to Solar Industry	3	0	3
MEC 131	Mechanics I - Statics for Engineering Technology	3	0	3
MTH 114	Engineering Technical Mathematics II	<u>5</u>	<u>0</u>	<u>5</u>
	Total .....	16	6	18

**Second-Year Curriculum  
Third Semester**

ARC 233	Advanced Architectural Drafting III	1	4	3
ARC 244	Building Mechanical Equipment	2	0	2
DRF 201	Computer Aided Drafting and Design I	1	3	2
HLT/PED1	Health or Physical Education Elective	2	0	2
MEC 132	Mechanics II - Strength of Materials for Engineering Technology	3	0	3
SPD 100	Principles of Public Speaking (or SPD 105)	3	0	3
E <sup>2</sup>	Social Science Elective	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	15	7	18

**Fourth Semester**

ARC 234	Advanced Architectural Drafting IV	1	4	3
ARC 255	Construction Estimating	2	0	2
CIV 218	Structural Design	4	0	4
DRF 202	Computer Aided Drafting and Design II	1	3	2
E <sup>3</sup>	Elective	3	0	3
E <sup>2</sup>	Social Science Elective	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	14	7	17
Total Minimum Credits for Degree .....				72

<sup>1</sup> Two credits of health or physical education are required of all students. Veterans will be awarded HLT/PED credit based on military service.

<sup>2</sup> A two semester sequence is recommended for students planning to transfer.

<sup>3</sup> For students who plan to transfer it is suggested that ENG 112 be chosen as the Elective.

## **BUSINESS ADMINISTRATION**

### **ASSOCIATE IN SCIENCE DEGREE**

213

**Purpose:** The curriculum is designed for persons who plan to transfer to a four-year college or university to complete a baccalaureate degree program in business administration. Students are urged to acquaint themselves with the requirements of the major department in the college or university to which transfer is contemplated and also to consult with the counseling office of the community college in planning their program and selecting electives. In order to prepare for junior class standing at a four-year college or university, the student

usually must complete a program at the community college that is comparable in length and course content to the first two years of the program at the four-year institution.

**Curriculum Admission Guidelines:** 4 units of high school English; 3 units of mathematics (algebra and geometry); 1 unit of laboratory science; and 1 unit of social studies. Developmental courses may be recommended for students with deficiencies in English and mathematics.

**Business Administration Curriculum**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
ENG 111	College Composition I	3	0	3
HIS 101	History of Western Civilization I (or HIS 121)	3	0	3
MTH 163	Pre-Calculus Mathematics I (or MTH 175-177)	3-5	0	3-5
E <sup>1</sup>	Science Elective	3	3	4
STD 100	Orientation	1	0	1
E <sup>2</sup>	Elective	3	0	3
Total .....		16-18	3	17-19
<b>Second Semester</b>				
ENG 112	College Composition II	3	0	3
HIS 102	History of Western Civilization II (or HIS 122)	3	0	3
MTH 271	Applied Calculus I (or MTH 176-178)	3-5	0	3-5
E <sup>1</sup>	Science Elective	3	3	4
E <sup>2</sup>	Elective	3	0	3
Total .....		15-17	3	16-18
<b>Second-Year Curriculum</b>				
<b>Third Semester</b>				
ACC 211	Principles of Accounting I	3	0	3
ACC 213	Principles of Accounting Lab I	0	2	1
CIS 150	Intro. to Microcomputer Software	3	0	3
ECO 201	Principles of Economics I	3	0	3
ENG 241	Survey of American Literature (or ENG 243)	3	0	3
HLT <sup>3</sup> 110	Concepts of Personal and Community Health (or PED Elective)	2	0	2
MTH <sup>2</sup> 241	Statistics I (or Elective)	3	0	3
Total .....		17	2	18
<b>Fourth Semester</b>				
ACC 212	Principles of Accounting II	3	0	3
ACC 214	Principles of Accounting Lab II	0	2	1
ECO 202	Principles of Economics II	3	0	3
MTH <sup>2</sup> 242	Statistics II (or Elective)	3	0	3
SPD 100	Principles of Public Speaking	3	0	3
E <sup>2</sup>	Elective	3	0	3
Total .....		15	2	16
Total Minimum Credits for Degree.....				67

<sup>1</sup> A two-semester sequence of natural science must be chosen from the following: BIO 101-102, CHM 111-112, GOL 105-106, or PHY 201-202.

<sup>2</sup> Electives may be substituted from the "Approved List of Transfer Electives" at the beginning of the Programs of Study section.

<sup>3</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit bases on military service.

## BUSINESS INDUSTRIAL SUPERVISION

(Career Studies)  
018

**Occupational Objectives:** Program is designed to prepare the individual to operate in business and industry on the supervisory level. The individual would be prepared for employment in the area of supervision, training, employee relations, and various foreman positions.

### Business Industrial Supervision Curriculum

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First Semester</b>				
BUS 111	Principles of Supervision I	3	0	3
PSY 201	Introduction to Psychology	3	0	3
<b>Second Semester</b>				
BUS 150	Principles of Management	3	0	3
BUS 205	Human Resource Management	3	0	3
<b>Third Semester</b>				
ENG 111	English Composition	3	0	3
SAF 126	Principles of Industrial Safety	3	0	3
CIS 150	Into. to Microcomputer Software	3	0	3
Total .....		21	0	21
Total Minimum Credits for Certificate .....				21

## CHILD CARE

(Certificate)  
634

**Purpose:** The curriculum is designed to introduce interested persons, including parents, to the field of early childhood education and to provide opportunities for persons presently working in this field or allied professions to improve the knowledge and skills necessary to foster development in young children — intellectual, social, physical, emotional, and creative. Also, this curriculum has been established to provide competencies in the areas proposed for the Child Development Associate Credential of the National Association for the Education of Young Children.

**Occupational Objectives:** Positions in day care centers, nursery schools, recreation

programs, foster homes, hospital playrooms, family day care facilities, in-home care, and other facilities offering services for pre-school children.

**Curriculum Admission Guidelines:**

Evidence that the applicant possesses the intellectual, emotional, and physical capacities and the interest and aptitude necessary for relating successfully to young children. Developmental courses may be recommended for students with deficiencies in English and mathematics. Each student is responsible for transportation to and from field sites used for laboratory experience. Students considering further work in early childhood education are advised to consult



the catalog listings Early Childhood Development, A.A.S. Degree, and/or Education. Admission to internship (CHD 165, 265) is contingent upon a satisfactory medical examination. The medical form supplied at the beginning of the fall semester must be returned to the program head no later than September 30.

**Advanced Placement:** Students who have completed a two or three year child care/early childhood development curriculum in an area high school may be awarded credit for CHD 120 and CHD 265 with certain conditions.

<b>Child Care Curriculum</b>					
<b>Course Number</b>	<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>	
<b>First Semester</b>					
CHD 121	Childhood Educational Development I	3	0	3	
CHD 125	Creative Activities for Children	2	2	3	
CHD <sup>1</sup> 165	Observation and Participation in Early Childhood Settings	1	6	3	
ENG 111	College Composition I (or ENG 101)	3	0	3	
HLT <sup>2</sup> 106	First Aid and Safety	2	0	2	
PSY 235	Child Psychology	3	0	3	
STD 100	Orientation	<u>1</u>	<u>0</u>	<u>1</u>	
	Total .....	15	8	18	
<b>Second Semester</b>					
CHD 122	Childhood Educational Development II (or CHD 120)	3	0	3	
CHD <sup>1</sup> 265	Observation and Participation in Early Childhood Settings	1	6	3	
CHD 216	Early Childhood Programs, School, and Social Change	3	0	3	
ENG 112	College Composition II (or ENG 102)	3	0	3	
HLT 135	Child Health and Nutrition	3	0	3	
PSY 120	Human Relations	<u>3</u>	<u>0</u>	<u>3</u>	
	Total .....	16	6	18	
Total Minimum Credits for Certificate .....				36	

<sup>1</sup> Coordinate with CHD 121 and CHD 122/120

<sup>2</sup> The requirement for first aid training may be met by a Red Cross Certificate in basic first aid. An additional two hours of course work must be taken to fulfill the credit hours requirement.

**CIVIL ENGINEERING  
TECHNOLOGY**

*ASSOCIATE IN  
APPLIED SCIENCE DEGREE  
915*

**Purpose:** This curriculum is designed to prepare students for a career in the civil engineering technology field, with major applications in surveying and building construction. The program requires courses in drafting, surveying, construction planning, and other topics that are immediately useful to employers in the civil engineering and construction oriented fields. Upon graduation, students may choose to enter the job market or transfer to a senior institution that offers a baccalaureate degree in Civil Engineering Technology.

**Occupational Objectives:** Varied opportunities with construction industries; technician with highway department; survey party member or chief; estimator.

**Curriculum Admission Guidelines:** Proficiency in high school English and 3 units of mathematics (2 units of algebra and 1 unit of geometry or trigonometry). Developmental courses may be recommended for students with deficiencies in English and mathematics.

**Civil Engineering Technology Curriculum**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
ARC 111	Introduction to Architectural Drafting I	1	6	3
CIV 230	Civil Construction Materials	2	2	3
EGR 100	Engineering Technology Orientation	0	2	1
ENG 111	College Composition I	3	0	3
MTH 113	Engineering Technical Mathematics I	5	0	5
SPD 100	Principles of Public Speaking (or SPD 105)	3	0	3
STD 100	Orientation	<u>1</u>	<u>0</u>	<u>1</u>
	Total .....	15	10	19
<b>Second Semester</b>				
CIV 130	Construction Planning	3	0	3
CIV 171	Surveying I	2	3	3
CIV 295	Topics in Air/Water Resources	2	0	2
DRF 201	Computer Aided Drafting & Design I	1	3	2
MEC 131	Mechanics I - Statics for Engineering Technology	3	0	3
MTH 114	Engineering Technical Mathematics II	<u>5</u>	<u>0</u>	<u>5</u>
	Total .....	16	6	18

**Second-Year Curriculum  
Third Semester**

CIV 145	Applied Soil Erosion and Sediment Control	2	0	2
CIV 172	Surveying II	2	3	3
DRF 202	Computer Aided Drafting & Design II	1	3	2
MEC 132	Mechanics II - Strength of Materials	3	0	3
PHY 201	General College Physics I	3	3	4
E <sup>2</sup>	Social Science Elective	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	14	9	17

**Fourth Semester**

CIV 201	Suburban Development I	2	2	3
CIV 218	Structural Design	4	0	4
HLT/PED <sup>3</sup>	Health or Physical Education	2	0	2
PHY 202	General College Physics II	3	3	4
E <sup>1</sup>	Elective	2	0	2
E <sup>2</sup>	Social Science Elective	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	16	5	18

Total Minimum Credits for Degree ..... 72

<sup>1</sup> For students who plan to transfer it is suggested that ENG 112 be chosen as the Elective.

<sup>2</sup> A two-semester sequence is recommended for students planning to transfer to a baccalaureate degree program.

<sup>3</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

**CIVIL TECHNOLOGY/  
SURVEYING**

*(Career Studies)  
057*

**Purpose:** This program is designed to prepare students for entry level positions in Civil Technology or to expand the knowledge and skills of individuals presently employed in the field. All of the technical courses offered through this program may be applied to the Civil Engineering Technology degree program.

**Occupational Objectives:** Civil Technician, Surveying Aide

**Curriculum Admission Guidelines:** Proficiency in high school English and mathematics (1 unit of algebra). Developmental courses may be recommended for students with deficiencies in English and mathematics.

**Civil Technology/Surveying Curriculum  
(Career Studies)**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
ARC 111	Introduction to Architectural Drafting I	1	6	3
MTH 103	Applied Technical Mathematics I	3	0	3
MTH 105	Survey of Technical Mathematics I	<u>2</u>	<u>0</u>	<u>2</u>
	Total .....	6	6	8
<b>Second Semester</b>				
CIV 171	Surveying I	2	3	3
DRF 201	Computer Aided Drafting & Design I	<u>1</u>	<u>3</u>	<u>2</u>
	Total .....	3	6	5
<b>Second-Year Curriculum</b>				
<b>Third Semester</b>				
CIV 145	Applied Soil Erosion and Sediment Control	2	0	2
CIV 172	Surveying II	<u>2</u>	<u>3</u>	<u>3</u>
	Total .....	4	3	5
<b>Fourth Semester</b>				
CIV 201	Suburban Development I	2	2	3
DRF 202	Computer Aided Drafting & Design II	<u>1</u>	<u>3</u>	<u>2</u>
	Total .....	3	5	5
Total Credits Required for Career Studies Certificate .....				23

**CLERICAL STUDIES**

*(Certificate)  
218*

**Purpose:** The curriculum is primarily designed to train persons for full-time employment following graduation.

**Occupational Objectives:** Typist/data entry; file clerk; receptionist; general office work; word processing specialist.

**Curriculum Admission Guidelines:**

Applicant must meet the general requirements for admission to the college. Prerequisite of high school typing or a satisfactory score (minimum of 35 wpm) on a keyboarding skill examination required. OFT 111 or credit by exam.

**Clerical Studies Curriculum**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First Year Curriculum</b>				
<b>First Semester</b>				
BUS 100	Introduction to Business	3	0	3
ENG 101	Practical Writing I	3	0	3
OFT <sup>1</sup> 112	Keyboarding/Typewriting II	3	0	3
OFT 251	Office Systems and Procedures I	3	0	3
STD 100	Orientation	1	0	1
E	Elective	<u>2</u>	<u>0</u>	<u>2</u>
	Total .....	15	0	15

**Second Semester**

OFT	215	Executive Keyboarding/Typewriting	3	0	3
OFT	216	Word Processing Equipment Operation	3	0	3
OFT	241	Machine Transcription I	3	0	3
OFT	252	Office Systems and Procedures II	3	0	3
SPD	105	Oral Communications	<u>3</u>	<u>0</u>	<u>3</u>
Total .....			15	0	15

Total Minimum Credits for Degree ..... 30

*\* Prerequisite OFT 111 or credit by exam*

**COMMERCIAL ART**

*ASSOCIATE IN  
APPLIED SCIENCE DEGREE  
513*

**Purpose:** The curriculum is designed primarily for persons who seek full-time employment in the commercial art field upon completion of the community college program.

**Occupational Objectives:** Advertising, illustrating, printing, photography, and related occupations.

**Curriculum Admission Guidelines:** A satisfactory aptitude for drawing is desirable. Proficiency in high school English and 1 unit of high school algebra necessary. Proficiency in keyboarding is strongly recommended. Developmental courses may be recommended for students with deficiencies in English, reading, and/or mathematics.

**Commercial Art Curriculum**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
ART 101	History and Appreciation of Art I	3	0	3
ART 121	Drawing I	1	4	3
ART 131	Fundamentals of Design I	1	4	3
ENG 111	College Composition I (or ENG 101)	3	0	3
STD 100	Orientation	1	0	1
E <sup>1</sup>	Social Science Elective	<u>3</u>	<u>0</u>	<u>3</u>
Total .....		12	8	16
<b>Second Semester</b>				
ART 122	Drawing II	1	4	3
ART 132	Fundamentals of Design II	1	4	3
CIS 150	Introduction to Microcomputer Software	3	0	3
E <sup>1</sup>	Social Science Elective	3	0	3
E <sup>2</sup>	Elective	3	0	3
PHT 101	Photography I	<u>1</u>	<u>4</u>	<u>3</u>
Total .....		12	12	18

**Second-Year Curriculum**

**Third Semester**

ART 221	Drawing III	1	4	3
ART 241	Painting I (or ART 243)	1	4	3
ART 251	Communication Design I	2	3	3
ART 281	Graphic Techniques I	2	3	3
MTH <sup>3</sup> 120	Introduction to Mathematics	<u>3</u>	<u>0</u>	3
	Total .....	9	14	15

**Fourth Semester**

ART 242	Painting II (or ART 244)	1	4	3
ART 252	Communication Design II	2	3	3
ART 282	Graphic Techniques II	2	3	3
ART 286	Communication Arts Workshop	1	4	3
SPD 105	Oral Communication (or SPD 100)	3	0	3
HLT <sup>4</sup> 110	Concepts of Personal and Community Health (or Physical Education)	<u>2</u>	<u>0</u>	<u>2</u>
	Total .....	11	14	17

Total Minimum Credits for Degree ..... 66

<sup>1</sup> Social science elective may be chosen from PSY 120, ECO 120, PLS 130, PSY 201-202, ECO 201-202, PLS 211-212, HIS 101-102, HIS 121-122, or SOC 201-202. A two-semester sequence is recommended for transfer.

<sup>2</sup> For students who plan to transfer it is suggested that English 112 be taken as an elective.

<sup>3</sup> For students who plan to transfer, Math 151 or 163 is recommended.

<sup>4</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

**COMPUTER INFORMATION SYSTEMS**

ASSOCIATE IN  
APPLIED SCIENCE DEGREE  
234

**Purpose:** This curriculum is designed for persons who will seek employment in the computer information field in business or industry.

**Occupational Objectives:** Computer Programming Technician or Trainee, and related Data Processing occupations.

**Curriculum Admission Guidelines:** Minimum of two units of high school

mathematics, one of which must be algebra, or the equivalent, and proficiency in high school English. Proficiency in keyboarding skills required (high school or college keyboarding). Computer literacy is strongly recommended. Developmental courses may be recommended for students with deficiencies in English and mathematics.

**Computer Information Systems Curriculum**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
ACC 211	Principles of Accounting I	3	0	3
ACC 213	Principles of Accounting Lab I	0	2	1
CIS 131	Computer Programming: COBOL I	2	1	3
ECO 201	Principles of Economics I	3	0	3
ENG 111	College Composition I	3	0	3
MTH 120	Introduction to Mathematics (or MTH 163)	3	0	3
STD 100	Orientation	<u>1</u>	<u>0</u>	<u>1</u>
	Total .....	15	3	17
<b>Second Semester</b>				
ACC 212	Principles of Accounting II	3	0	3
ACC 214	Principles of Accounting Lab II	0	2	1
BUS 125	Applied Business Mathematics or MTH 271 or BUS 225	3	0	3
CIS 158/	Micro DataBase Mgn. Software (CIS 158) or	2	1	3
121	Computer Programming: BASIC I			
CIS 231	Computer Programming: COBOL II	2	1	3
ECO <sup>1</sup> 202	Principles of Economics II	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	13	4	16
<b>Second-Year Curriculum</b>				
<b>Third Semester</b>				
CIS 176	C Language	3	2	4
CIS 205	Job Control Language	3-4	2	3-4
CIS 225	Computer Information System Development	3	0	3
SPD 105	Oral Communication	3	0	3
HLT <sup>2</sup> 110	Concepts of Personal and Community Health (or PED Elective)	<u>2</u>	<u>0</u>	<u>2</u>
	Total .....	14-15	4	15-16
<b>Fourth Semester</b>				
CIS 221	Computer Programming: BASIC II	3	2	4
CIS 295	CIS Comprehensive Review	1	0	1
CIS 161	Computer Programming: Assembler I	3	2	4
CIS 287	System Development Project	2	2	3
FIN 215	Financial Management	3	0	3
E <sup>3</sup>	Elective	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	15	6	18
Total Minimum Credits for Degree .....				66

<sup>1</sup>An elective may be substituted for ECO 202; the elective must be selected from History, Political Science, Psychology, Sociology, or Social Science.

<sup>2</sup>Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

<sup>3</sup>Elective may be any 100 or above level course.

## DENTAL HYGIENE

### ASSOCIATE IN APPLIED SCIENCE DEGREE

118

**Purpose:** The curriculum is designed to prepare selected students as primary preventive oral health professionals licensed to practice dental hygiene. Upon successful completion of the program, graduates will be eligible to take national, regional, and state board examinations leading to licensure as a registered dental hygienist (R.D.H.)

**Accreditation Status:** The program has been accredited by the Commission on Dental Accreditation of the American Dental Association, a specialized accrediting body recognized by the United States Department of Education.

**Occupational Objectives:** A dental hygienist may work in such practice settings as:

- Dental offices and dental clinics
- Federal, state and local health departments
- Hospitals and nursing homes/home health
- School districts or departments of education
- Educational programs for dental, dental hygiene, and dental assisting students
- Correctional facilities
- Private and public centers for pediatric, geriatric, and other individuals/groups with special needs
- Health Maintenance
- Organizations/Managed Care Organizations

**Curriculum Admissions Standards:**

Applicants to the Dental Hygiene Program must have completed the following: (a) Four units of high school English; (b) One unit each of high school or college biology and chemistry; (c) Two units of high school or college social studies; and (d) Algebra II or college equivalent. A grade of "C" or better is necessary in required high school/college units of math and science. Priority consideration will be given to applicants with a high school and/or college grade point average of 2.5 or above.

Applicants who are currently enrolled in high school or who have completed fewer than 45 quarter hours or 30 semester hours of college work must submit SAT or ACT scores. Priority consideration will be given to applicants with a combined (total) score of 900 on the SAT or a composite score of 18 or above on the ACT. Applicants who graduated from high school more than five (5) years prior to date of application who have not attempted any college work will not be required to submit SAT/ACT scores.

**Admission Priorities:** When admission to certain selective programs must be limited because the number of applicants exceeds available space, priority shall be given to all qualified applicants as follows: (1) residents of the political subdivisions supporting the college, followed by (2) other Virginia residents, (3) residents of other states, and finally (4) international students with student or diplomatic visas.

**Admission Procedures:** The Dental Hygiene Program is open to qualified male or female applicants. Early application is advisable due to the limited number of positions in the program. Deadline for submitting complete application materials is March 15 for the upcoming academic year. If the number of qualified applicants falls below the maximum enrollment, the application deadline may be extended. Applicants should be aware that meeting the curriculum admission standards does not guarantee program admission. Applicants will be notified in writing of the action taken by the Dental Hygiene Admissions Committee.

To qualify for consideration by the Dental Hygiene Admissions Committee, the applicant must submit a complete application which includes the following: application to the college, Dental Hygiene Program Application, official transcripts of all



high school and college work, SAT/ACT scores (if applicable as noted above), two letters of recommendation from employers/former teachers, and an essay related to the candidate's reason for making Dental Hygiene their career choice. A personal interview with a counselor is required in order for the counselor to complete the Dental Hygiene Admissions Advising Form. Qualified applicants must be interviewed by the Dental Hygiene faculty.

#### **Essential Dental Hygiene Functions:**

To successfully complete the clinical component of the Program, the student must be able to perform all of the essential functions of a dental hygienist:

1. Communicate satisfactorily with clients, physicians, peers, family members and the health care team.
2. See and hear adequately to note slight changes in the client's condition.
3. Hear adequately to perceive and interpret various equipment signals.
4. Demonstrate adequate eye/hand coordination for dexterity in manipulation of hand instruments and other equipment used in clinical practice.
5. Use hands for fine manipulation.
6. Manage the care of a client in a sudden emergency, including one-man CPR when necessary.
7. Possess the visual acuity to correctly read handwritten orders, medication records, chart contents, and provide safety for clients.

Despite the foregoing, a qualified person with a disability who can perform these essential functions with reasonable accommodation will be considered for admission along with other qualified applicants.

**Clinical Environment:** The applicants should realize that student dental hygienists are, by nature of the profession, exposed regularly to highly stressful and demanding situations, difficult clients, and organizational and time pressures in a variety of client care settings. In addition, student and practicing dental hygienists are routinely exposed to blood and body fluids.

#### **Student Responsibilities After Acceptance Into the Program:**

1. Admission is contingent upon a satisfactory medical and dental examination indicating good general health. The medical examination must include evidence of a PPD skin test (or chest x-ray), and serology for the Hepatitis B surface antigen and antibody. The Heptavax vaccine is strongly recommended. All documentation must be submitted to the Dental Hygiene Program Head no later than August 1 or the student will be dropped from the program at that time.
2. Current certification in cardiopulmonary resuscitation (CPR) is required for both years of the program. Students are responsible for providing their own malpractice insurance coverage during the two years of the program. All documentation must be submitted to the Dental Hygiene Program Head no later than August 1 or the student will be dropped from the program at that time.
3. All students admitted to the Dental Hygiene Program must attend dental hygiene orientation, register for all classes, and pay their tuition prior to August 1. All students are expected to purchase instruments and uniforms at orientation.
4. Students admitted to the program with academic contingencies in biology, chemistry, or algebra must provide documentation of satisfactory completion of the contingency prior to the beginning of Fall classes. Failure to meet a stated contingency will result in admission being rescinded.
5. All students admitted to the program without prior experience in the dental field (chairside dental assisting) are required to observe dental and dental hygiene procedures in the dental office of their choice. The observation experience must be completed by August 1. Assistance in locating practitioners willing to provide observation experience may be provided in meeting this requirement. Written documentation of this experience is

required; forms will be provided by the Dental Hygiene Program upon admission.

6. Students in the program are responsible for transportation to and from agencies utilized for clinical and community health rotation experiences.

**Policy for Academic Retention:**

Continuation in the program: Satisfactory progress is demonstrated by achieving a grade of "C" or better in required Dental Hygiene and Natural Science courses. Students must satisfactorily complete BIO 141, 142, and NAS 185 with a grade of "C" or above before progressing to the second year of the program. CHM 111 or 101 must be completed with a grade of "C" or better prior to graduation. Students must complete required Dental Hygiene courses in sequence. Should a student receive a grade of "D" in any dental hygiene didactic course, didactic component of a clinical or laboratory course, or the laboratory component of a preclinical or didactic course, the student will be dropped from the program and must reapply for admission. Should a student receive a grade of "D" in the clinical component of DNH 142, 190, 244, or 245 due to failure to meet minimum clinical requirements for the semester, the student **may** progress to the next semester of the program **with faculty approval**, and will

have additional patient requirements for graduation added.

Readmission to the program will be based upon academic performance, and adherence to program policies regarding attendance and professionalism, and will be contingent upon available laboratory/clinical space. Students who have been dropped from the program must submit a written application for readmission to the program head no later than January 1st for the following fall semester, no later than May 15th for the following spring semester, and no later than August 15th for the following summer session. The program head will present the readmission request to the faculty for consideration. Students applying for readmission will be notified of their admission status in writing.

Students readmitted to the program are eligible to repeat a course only once, and a dental hygiene course must be repeated during the semester in which it is offered. The student may not continue with other required dental hygiene courses until the course is repeated.

Students earning a grade of "F" in any dental hygiene course will be dropped from the program and are ineligible for readmission unless there are extenuating circumstances (serious illness, death of an immediate family member).

**Dental Hygiene Curriculum**

<b>Course Number</b>	<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
DNH 111	Oral Anatomy	2	0	2
DNH 115	Histology/Head and Neck Anatomy	3	0	3
DNH 120	Management of Emergencies	1	0	1
DNH 141	Dental Hygiene I	3	6	5
ENG 111	College Composition (or ENG 101)	3	0	3
BIO 141	Human Anatomy and Physiology I	3	2	4
STD 100	Orientation	<u>1</u>	<u>0</u>	<u>1</u>
	Total .....	16	8	19

**Second Semester**

DNH 130	Oral Radiography for the Dental Hygienist	1	3	2
DNH 142	Dental Hygiene II	1	12	5
DNH 145	General and Oral Pathology	2	0	2
DNH 146	Periodontics for the Dental Hygienist	2	0	2
PSY <sup>1</sup> 201	Introduction to Psychology I	3	0	3
NAS 185	Microbiology	<u>3</u>	<u>2</u>	<u>4</u>
	Total .....	12	17	18

**Summer Session**

BIO 142	Human Anatomy and Physiology II	3	2	4
DNH 190	Coordinated Practice (variable credit)	2	3	3
DNH 150	Nutrition	2	0	2
DNH 210	Application of Periodontics	<u>1</u>	<u>0</u>	<u>1</u>
	Total .....	8	5	10

**Second-Year Curriculum**

**Third Semester**

CHM <sup>4</sup> 111	College Chemistry I (or CHM 101)	3	3	4
DNH 215	Dental Materials	2	3	3
DNH 216	Pharmacology	2	0	2
DNH 226	Public Health Dental Hygiene I	2	0	2
DNH 244	Dental Hygiene IV	1	12	5
HLT/PED <sup>2</sup>	Health or Physical Education Elective	<u>2</u>	<u>0</u>	<u>2</u>
	Total .....	12	18	18

**Fourth Semester**

DNH 227	Public Health Dental Hygiene II	0	3	1
DNH 230	Office Practice and Ethics	1	0	1
DNH 245	Dental Hygiene V	1	12	5
CIS 116	Computers and Information Systems	1	0	1
SOC <sup>1</sup> 201	Introduction to Sociology I (or SOC 215)	3	0	3
SPD 100	Principles of Public Speaking (or ENG 102)	3	0	3
E <sup>3</sup>	Elective	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	12	15	17

Total Minimum Credits for Degree ..... 82

<sup>1</sup> PSY 231, PSY 120, or PSY 125 may be substituted.

<sup>2</sup> Two credits of Health (HLT) or Physical Education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

<sup>3</sup> CHM 112 should be taken by students planning to transfer to a baccalaureate degree program.

<sup>4</sup> Includes instruction in fundamental mathematical skills.

## **EARLY CHILDHOOD DEVELOPMENT**

### *ASSOCIATE IN APPLIED SCIENCE DEGREE 636*

**Purpose:** This curriculum is designed to enable graduates to qualify as directors, assistant directors, teachers, assistant teachers, or as classroom aides in programs for young children. The curriculum has been established to provide competency in areas proposed by the professional child development community: ability to set up a safe and healthy environment; skills to advance the physical and intellectual competence of young children and to build positive self-concepts and individual strengths; ability to organize and sustain positive functioning of children and adults in a group in a learning environment; coordinate the home and out-of-home child rearing practices and expectations; and carry out the supplementary responsibilities related to programs for children. This curriculum will prepare students for national assessment for the Child Development Associate. In addition, the student is prepared to transfer to a four-year institution in Early Childhood Education and/or Child Development. Those students who are interested in working with special-needs children should consult with the Early Childhood Development Staff. In addition to the courses offered on campus, courses are offered at child-care centers and school sites. For information on establishing such courses, consult the Early Childhood Development Staff.

**Occupational Objectives:** Positions in independent child-care centers and kindergartens, family day-care homes, nursery schools, foster-care providers, hospital centers, homemaker services, centers for children with special needs, residential child-care facilities and industry associate centers. In addition, this program qualifies graduates for positions as elementary-school classroom aides.

**Curriculum Admission Guidelines:**

Evidence that the applicant possesses the intellectual, emotional, and physical capacities and the interest and aptitude necessary for relating successfully to young children. Satisfactory performance on an appropriate test may be required of those applicants whose records indicate academic weakness in English, reading, or mathematics. Admission to internship (CHD 165, 265) is contingent upon a satisfactory medical examination. The medical form supplied at the beginning of the fall semester must be returned to the Early Childhood Development Program Head no later than September 30.

High school or equivalent developmental college course prerequisites include Algebra I, Algebra II and Geometry for those students planning on working toward a baccalaureate degree at a four-year institution. (Students who plan to transfer to a four-year college are urged to consult the Early Childhood Development faculty members for electives and additional information.)

**Advanced Placement:** Students who have completed a two or three year child care/early childhood curriculum in an area high school may be awarded credit for CHD 120 and CHD 265 with certain conditions.

**Curriculum Completion Guidelines:**

Students who receive a final grade lower than "C" in any of the courses in the Early Childhood Development sequence must be approved by the program faculty to continue the major in Early Childhood Development prior to repeating the course. Each student is responsible for transportation to and from field sites used for laboratory experience.

**EARLY CHILDHOOD DEVELOPMENT CURRICULUM**

<b>Course Number</b>	<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
CHD 121	Childhood Educational Development I	3	0	3
CHD 125	Creative Activities for Children	2	2	3
CHD <sup>1</sup> 165	Observation and Participation in Early Childhood Settings	1	8	3
ENG <sup>2</sup> 111	College Composition I (or ENG 101)	3	0	3
PSY 235	Child Psychology	3	0	3
STD 100	Orientation	<u>1</u>	<u>0</u>	<u>1</u>
	Total .....	13	10	16
<b>Second Semester</b>				
CHD 122	Childhood Educational Development II (or CHD 120)	3	0	3
CHD 216	Early Childhood Programs, School, and Social Change	3	0	3
CHD <sup>1</sup> 265	Observation and Participation in Early Childhood Settings	1	8	3
HLT 135	Child Health and Nutrition (or CHD 118)	3	0	3
ENG <sup>2</sup> 112	College Composition II (or ENG 102)	3	0	3
PSY 120	Human Relations	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	16	8	18
<b>Second-Year Curriculum</b>				
<b>Third Semester</b>				
CHD 210	Introduction to Exceptional Children	3	0	3
CHD 270	Administration of Early Childhood Educational Programs	3	0	3
E <sup>3</sup>	Elective	3	0	3
HLT 106	First Aid and Safety	2	0	2
MTH 120	Introduction to Mathematics (or MTH 151)	3	0	3
SPD 100	Principles of Public Speaking	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	17	0	17
<b>Fourth Semester</b>				
CHD 126	Methods and Materials for Developing Science and Mathematical Concepts in Young Children	3	0	3
CHD 166	Infant and Toddler Programs (or CHD 118)	3	0	3
CHD 205	Guiding the Behavior of Young Children	3	0	3
CIS 150	Introduction to Microcomputer Software	3	0	3
SOC 215	Sociology of the Family	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	15	0	15
Total Minimum Credits for Degree .....				66

<sup>1</sup> Coordinate with CHD 121 and CHD 122/120.

<sup>2</sup> Students planning to transfer should take English 111-112.

<sup>3</sup> Students planning to transfer should select electives from the "Approved List of Transfer Electives."

## EARLY CHILDHOOD DEVELOPMENT

(Career Studies)  
060

**Occupational Objectives:** Entry-level positions in child care centers, nursery schools and other child care facilities for pre-school children. The program is designed to provide approved courses for upgrading the

education and skills of persons working in early childhood education, in accordance with the Virginia Department of Human Services. The program also serves to introduce early childhood inexperienced persons to the field.

### Early Childhood Development (Career Studies)

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
CHD 120	Introduction to Early Childhood Education	3	0	3
CHD 125	Creative Activities for Children	3	2	3
CHD 205	Guiding the Behavior of Young Children	3	0	3
HLT 135	Child Health and Nutrition	3	0	3
PSY 235	Child Psychology	<u>3</u>	<u>0</u>	<u>3</u>
Total .....		15	2	15
Total Credits Required for Career Studies Certificate .....				15

## EDUCATION

*ASSOCIATE IN SCIENCE DEGREE*  
625

**Purpose:** The curriculum is designed for persons who plan to transfer to a four-year college or university to complete a baccalaureate degree program in Teacher Education. Students who are considering certification in Early Childhood Education should consult the Early Childhood staff of Virginia Western Community College. Students are urged to acquaint themselves with the requirements of the major department in the college or university to which transfer is contemplated and also to consult with their faculty advisors in planning their program and selecting electives. In

order to prepare for junior class standing at a four-year college or university, the student usually must complete a program at the community college that is comparable in length and course content to the first two years of the program at the four-year institution.

**Curriculum Admission Guidelines:** 4 units of English, 2 units of college preparatory mathematics, 1 unit of laboratory science, and 1 unit of social science. Developmental courses may be recommended for students with deficiencies in English and mathematics.

**Education Curriculum**

<b>Course Number</b>	<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
STD 100	Orientation	1	0	1
ENG 111	College Composition I	3	0	3
HIS 121	United States History I	3	0	3
MTH 151	Mathematics for the Liberal Arts I (or MTH 163)	3	0	3
E <sup>2</sup>	Natural Science Elective	3	3	4
E <sup>1</sup>	Elective	3	0	3
	Total .....	16	3	17
<b>Second Semester</b>				
EDU 100	Introduction to Education	1	0	1
MTH 152	Mathematics for the Liberal Arts II (or MTH 271)	3	0	3
ENG 112	College Composition II	3	0	3
HIS 122	United States History II	3	0	3
E <sup>2</sup>	Natural Science Elective	3	3	4
E <sup>1</sup>	Elective	3	0	3
	Total .....	16	3	17
<b>Second-Year Curriculum</b>				
<b>Third Semester</b>				
E <sup>3</sup>	Social Science Elective	3	0	3
PSY 201	Introduction to Psychology I	3	0	3
ENG 241	Survey of American Literature (or ENG 243)	3	0	3
E <sup>4</sup>	Humanities Elective	3	0	3
CIS 150	Introduction to Microcomputer Software	3	0	3
	Total .....	15	0	15
<b>Fourth Semester</b>				
E <sup>3</sup>	Social Science Elective	3	0	3
PSY 202	Introduction to Psychology II	3	0	3
ENG 242	Survey of American Literature (or ENG 244)	3	0	3
HLT <sup>5</sup> 110	Concepts of Personal and Community Health	2	0	2
E <sup>1</sup>	Elective	2-3	0	2
SPD 100	Principles of Public Speaking	3	0	3
	Total .....	16-17	0	16
Total Minimum Credits for Degree .....				65

<sup>1</sup> Nine semester hours must be chosen from Art, Music, Philosophy, or Foreign Language as listed from the "Approved List of Transfer Electives" at the beginning of the Programs of Study section.

<sup>2</sup> Biology 101-102 are preferred electives; however, electives may be chosen from the "Approved List of Transfer Electives" at the beginning of the Programs of Study section.

<sup>3</sup> A two-semester sequence should be selected from the following: ECO 201-202, PLS 211-212, or SOC 201-202. Students transferring to Roanoke College should take PSY 231-232.

<sup>4</sup> Humanities elective must be chosen from the "Approved List of Transfer Electives" at the beginning of the Programs of Study section.

<sup>5</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

**EDUCATION SECRETARY**

(Career Studies)  
020

**Purpose:** Designed for those employed as educational secretary. Provides general office and educational training.

<b>Education Secretary Curriculum</b>				
<b>Course Number</b>	<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
<b>First Semester</b>				
PSY 120	Human Relations	3	0	3
OFT 100	Office Skills Review	3	0	3
OFT 138	Educational Office Procedures and Records Management	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	9	0	9
<b>Second Semester</b>				
EDU 149	History and Philosophy of Education for School Secretaries	3	0	3
CIS <sup>1</sup> 110/150	Fund. of Computer Information Systems	3	0	3
E <sup>2</sup>	Elective	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	9	0	9
Total Minimum Credits for Career Studies Certificate .....				18

<sup>1</sup> CIS 100 or CIS 110 may be substituted.

<sup>2</sup> OFT elective to be selected with departmental approval.

**ELECTRICAL/ELECTRONICS ENGINEERING TECHNOLOGY**

ASSOCIATE IN  
APPLIED SCIENCE DEGREE  
941

**Purpose:** The Electrical and Electronics Engineering Technology program has been designed to prepare the graduate for a career in a broad spectrum of Electrical Engineering Technology roles. The curriculum is composed of a sequence of lecture and laboratory courses that have been planned and selected to provide both the theoretical foundation and the application experiences essential to the understanding of the complex principles and practices of the modern electronics field (hardware and software) and the most

recent developments in the electrical power and communications industries. First-year students receive instruction in English and mathematics, along with introductory and intermediate-level electrical courses. Circuit analysis techniques, industrial practices, electronic devices, and measurement and instrumentation principles are presented. The advanced courses of the second year provide an in-depth study in electronic circuit design (both analog and digital) as well as application-oriented sequences in electrical



machinery, electronic communications, and computer-based systems. In addition to the laboratory experiences provided with each course, the student participates in a shop and seminar-project program to develop basic skills in the fabrication of electronic devices.

Transfer opportunities exist for those desiring to complete a four-year program at certain institutions offering a baccalaureate degree in Engineering Technology.

**Occupation Objective:** Electronics Technician; Computer System Field Technician; Power and Control System

Technician; Broadcast Electronics Technician; and Communication Technician.

**Curriculum Admission Guidelines:**

Proficiency in high school English and 3 units of mathematics (2 units of algebra and 1 unit of geometry or trigonometry).

Developmental courses may be recommended for students with deficiencies in English and mathematics.

**Accreditation:** This program has been accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology.

**Electrical/Electronics Engineering Technology Curriculum  
Day Course Sequence**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
EGR 127	Introduction To Computer Programming	1	2	2
HLT/PED	Health or Physical Education	1	0	1
ENG 111	College Composition I	3	0	3
ETR 131	Electrical Circuits I	3	3	4
MTH 113	Engineering Technical Mathematics I	5	0	5
STD 100	Orientation	1	0	1
	Total .....	14	5	16
<b>Second Semester</b>				
SPD 100	Principles of Public Speaking (or ENG 105)	3	0	3
ETR 132	Electrical Circuits II	3	3	4
HLT/PED <sup>2</sup>	Health or Physical Education	1	0	1
MTH 114	Engineering Technical Mathematics II	5	0	5
E <sup>1</sup>	Elective	3	0	3
ELE 119	Electrical Shop Practices	0	3	1
	Total .....	15	6	17
<b>Summer Semester</b>				
ELE 211	Electrical Machines I	3	3	4
ETR 280	Introduction to Digital Logic Circuits and Computers	3	3	4
	Total .....	6	6	8
<b>Second-Year Curriculum</b>				
<b>Third Semester</b>				
ETR 251	Electronic Devices and Circuit Analysis I	4	3	5
ETR 265	Advanced Microprocessors	4	3	5
PHY 201	General College Physics I	3	3	4
E <sup>3</sup>	Social Science Elective	3	0	3
	Total .....	14	9	17

**Fourth Semester**

ETR	241	Introduction to Communication Systems	3	3	4
ETR	252	Electronic Devices and Circuit Analysis II	4	3	5
ELE	239	Programmable Controllers	1	2	2
E <sup>3</sup>		Social Science Elective	3	0	3
PHY	202	General College Physics II	<u>3</u>	<u>3</u>	<u>4</u>
Total .....			14	11	18
Total Minimum Credits for Degree .....					76

<sup>1</sup> For students who plan to transfer, it is suggested that ENG 112 be chosen as the Elective.

<sup>2</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military credit.

<sup>3</sup> A two-semester sequence is recommended for students planning to transfer to a baccalaureate degree program.

**Electrical/Electronics Engineering Technology Curriculum  
Evening Course Sequence**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First Semester</b>				
ETR 131	Electrical Circuits I	3	3	4
MTH 113	Engineering Technical Mathematics I	<u>5</u>	<u>0</u>	<u>5</u>
Total .....		8	3	9
<b>Second Semester</b>				
ETR 132	Electrical Circuits II	3	3	4
MTH 114	Engineering Technical Mathematics II	<u>5</u>	<u>0</u>	<u>5</u>
Total .....		8	3	9
<b>Summer Semester</b>				
EGR 127	Intro. Computer Programming	1	2	2
ELE 119	Electrical Shop Practices	0	3	1
Total .....		1	5	3
<b>Third Semester</b>				
ETR 251	Electronic Devices and Circuit Analysis I	<u>4</u>	<u>3</u>	<u>5</u>
Total .....		4	3	5
<b>Fourth Semester</b>				
ETR 252	Electronic Devices and Circuit Analysis II	<u>4</u>	<u>3</u>	<u>5</u>
Total .....		4	3	5
<b>Fifth Semester</b>				
ETR 280	Introduction to Digital Logic Circuits and Computers	3	3	4
ELE 211	Electrical Machines	<u>3</u>	<u>3</u>	<u>4</u>
Total .....		6	6	8
<b>Sixth Semester</b>				
ETR 265	Advanced Microprocessors	4	3	5
ELE 239	Programmable Controllers	<u>1</u>	<u>2</u>	<u>2</u>
Total .....		5	5	7

continued

**Seventh Semester**

ETR 241	Electronic Communications I	<u>3</u>	<u>3</u>	<u>4</u>
	Total .....	3	3	4
<b>ADDITIONAL REQUIRED COURSES THAT MAY BE TAKEN ANY SEMESTER</b>				
E	Elective	3	0	3
ENG <sup>1</sup> 111	College Composition I	3	0	3
SPD <sup>1</sup> 100	Principles of Public Speaking (or ENG 105)	3	0	3
HLT/PED <sup>2</sup>	Health or Physical Education Elective	2	0	2
PHY 201	General College Physics I	3	3	4
PHY 202	General College Physics II	3	3	4
E <sup>3</sup>	Social Science Elective	3	0	3
E <sup>3</sup>	Social Science Elective	3	0	3
STD 100	Orientation	<u>1</u>	<u>0</u>	<u>1</u>
	Total .....	24	6	26
Total Minimum Credits for Degree .....				76

<sup>1</sup> For students who plan to transfer it is suggested that ENG 112 be chosen as an Elective.  
<sup>2</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.  
<sup>3</sup> A two-semester sequence is recommended for students planning to transfer to a baccalaureate degree program.

**ELECTRICAL WIRING**

(Career Studies)  
056

**Purpose:** This Certificate in Electrical Wiring is designed to meet the 240 clock hours of formal training necessary for certification as a Journeyman Electrician. In addition to the 240 clock hours of formal instruction, four years of practical experience are required before one can take the Journeyman Exam. This program will give the student the

classroom knowledge needed to enter the Electrical Construction and Maintenance field as a helper or apprentice.

**Occupational Objectives:**

- Plant Electrician
- Electrician
- Estimator

**Electrical Wiring Curriculum  
(Career Studies)**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First Semester</b>				
BLD 111	Blueprint Reading and the Building Code	2	2	3
ELE 133	Practical Electricity I	<u>2</u>	<u>2</u>	3
	Total .....	4	4	6

<b>Second Semester</b>					
ELE	110	Home Electric Power	2	2	3
ELE	134	Practical Electricity II	<u>2</u>	<u>2</u>	<u>3</u>
Total .....			4	4	6
<b>Third Semester</b>					
ELE	138	National Electrical Code	<u>2</u>	<u>0</u>	<u>2</u>
Total .....			2	0	2
Total Credits Required for Career Studies Certificate .....					14

## **ELECTRONIC SERVICING**

*(Career Studies)*  
009

**Purpose:** The career studies program in Electronic Servicing is designed to prepare a student for full-time employment in the servicing of electronic systems ranging from digital computers and TVs to audiovisual equipment. The curriculum involves three semesters of study and practice in the specific technical subjects that are required for competence in this field. There are no general education courses required in this curriculum.

**Occupational Objectives:** Home entertainment equipment service technician; cable system technician; computer repair technician; and audiovisual equipment repair technician.

**Curriculum Admission Guidelines:** Proficiency in high school English and completion of Algebra I. Developmental courses will be required for students with deficiencies in English and mathematics.

### **Electronic Servicing Curriculum**

	Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First Semester</b>					
	ELE 119	Electrical Shop Practices	0	3	1
	ETR 100	Electronic Problem-Solving Laboratory	0	3	1
	ETR 113	DC and AC Fundamentals	3	3	4
	RTV 124	TV Electronics	<u>3</u>	<u>3</u>	<u>4</u>
Total .....			6	12	10
<b>Second Semester</b>					
	ETR 123	Electronic Applications I	1	2	2
	ETR 141	Electronics I	3	0	3
	RTV 121	Advanced Servicing and Trouble-Shooting Techniques	<u>3</u>	<u>6</u>	<u>5</u>
Total .....			7	8	10

**Third Semester**

ETR 142	Electronics II	3	0	3
ETR 199	Supervised Study	0	3	1
ETR 285	Fundamentals of Microcomputer Repair	3	3	4
ETR 190	Coordinated Internship	0	5	1
	Total .....	6	11	9
Total Minimum Credits for Certificate .....				29

**ENGINEERING**

*ASSOCIATE IN SCIENCE DEGREE  
831*

**Purpose:** Engineers are the planners and designers of the technological systems that are the backbone of our modern society. They apply principles of science and mathematics to meet the needs or solve the problems of humankind. These problems typically are multifaceted and involve the interplay of technological, economic, environmental, sociological, and political components. For this reason, the engineer requires a background in the humanities and social sciences as well as in mathematics and the natural sciences.

The Associate in Science Degree program in Engineering is designed for persons who plan to transfer to a four-year college or university to complete a baccalaureate degree. The following engineering fields are supported by this program: aerospace, agriculture, building construction, ceramics, chemical, civil, electrical, industrial, mechanical, metallurgical, mining, and nuclear.

Students are urged to acquaint themselves

with the requirements of the major department in the college or university to which transfer is contemplated and also to consult with the counseling office of the community college in planning their program and selecting electives. In order to prepare for junior class standing at a four-year college or university, the student usually must complete a program at the community college that is comparable in length and course content to the first two years of the program at the four-year institution.

**Curriculum Admission Guidelines:** 4 units of English, 4 units of mathematics (2 units of algebra, 1 unit of geometry, and 1 unit of advanced math or trigonometry); 1 unit of laboratory science; and 1 unit of social studies. Developmental courses may be recommended for students with deficiencies in English and mathematics.

An articulation agreement with Virginia Tech guarantees admission to the College of Engineering for all students who graduate from this program with a 3.0 GPA or higher.

**Engineering Curriculum**

<b>Course Number</b>	<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
CHM 111	College Chemistry I	3	3	4
EGR 115	Engineering Graphics	1	3	2
EGR 120	Introduction to Engineering	2	0	2
ENG 111	College Composition I	3	0	3
HLT/PED <sup>1</sup>	Health or Physical Education	1-2	0	1-2
MTH 175	Calculus of One Variable I	3	0	3
MTH 177	Introductory Linear Algebra	2	0	2
STD 100	Orientation (or approved STD elective)	1	0	1
	Total .....	16-17	6	18-19

**Second Semester**

CHM 112	College Chemistry II	3	3	4
EGR 125	Introduction to Engineering Methods	3	0	3
EGR 140	Engineering Mechanics - Statics	3	0	3
ENG 112	College Composition II	3	0	3
MTH 176	Calculus of One Variable II	3	0	3
MTH 178	Topics in Analytic Geometry	<u>2</u>	<u>0</u>	<u>2</u>
Total .....		17	3	18

**Second-Year Curriculum****Third Semester**

EGR 245	Engineering Mechanics - Dynamics	3	0	3
HLT/PED <sup>1</sup>	Health or Physical Education	1-2	0	1-2
E <sup>2</sup>	Social Science Elective	3	0	3
E <sup>3</sup>	Humanities Elective	3	0	3
MTH 277	Vector Calculus	4	0	4
PHY 241	University Physics I	3	<u>3</u>	4
Total .....		17-18	3	18-19

**Fourth Semester**

E <sup>2</sup>	Social Science Elective	3	0	3
E <sup>4</sup>	Elective	3	0	3
E <sup>5</sup>	Engineering Elective	3	0	3
MTH 291	Differential Equations	3	0	3
PHY <sup>6</sup> 222	Engineering Physics II	3	0	3
SPD 100	Principles of Public Speaking	<u>3</u>	<u>0</u>	<u>3</u>
Total .....		18	0	18

Total Minimum Credits for Degree .....72

<sup>1</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

<sup>2</sup> Students must select a two semester sequence from the following list: ECO 201-202, HIS 101-102, HIS 121-122.

<sup>3</sup> Students should work with their course advisors to carefully select a humanities elective that will be applicable in the baccalaureate program that they desire to pursue at a senior institution. Recommended electives include the following: HUM 201-202, ENG 241-242, ENG 243-244. Students who select HUM 201-202 and desire to transfer to Virginia Tech must take a 200 level social science sequence (ECO 201-202) to meet Virginia Tech core requirements.

<sup>4</sup> Elective must be chosen from the "Approved List of Transfer Electives" at the beginning of the Programs of Study section. Furthermore, the elective chosen should be compatible with the program requirements at the university that the student plans to attend.

<sup>5</sup> Students must select a course from the following list: EGR 206, EGR 246.

<sup>6</sup> Students who desire to transfer to a university program that requires a laboratory with this course should enroll in PHY 242.

**ENVIRONMENTAL SCIENCE AND TECHNOLOGY**

*(Career Studies)*

**Purpose:** Our modern industrial society has created and now must cope with serious problems concerning the ecology. Issues such as the abatement and control of air and water pollution, methods to deal with solid waste disposal, the handling and disposal of hazardous materials, the destruction of the rain forests, and so on have become high priority concerns for governments, businesses, industrial organizations and informed citizens throughout the world. The career studies program in Environmental Science and Technology is designed to develop or expand the knowledge and skills of persons desiring to become productively involved in the complex social, technical and regulatory issues associated with the purification and production of our environment.

Selected courses in this program may be of interest to students who are preparing for

certification in a variety of environmentally related occupations. Initial courses will introduce students to the scope of our environmental problems and discuss some of the technical and regulatory principles and practices that are fundamental to the environmental industry. Additional courses will deepen the student's understanding of the practical scientific principles and application techniques that are currently being used in addressing specific environmental problems.

**Occupational Objectives:** Environmental Assistant, Environmental Technician, Lab Technician and Lab Assistant

**Curriculum Admission Guidelines:** Proficiency in high school English and completion of Algebra I. Developmental courses will be required for students with deficiencies in English and mathematics.

**Environmental Science and Technology  
(Career Studies)**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First Year Curriculum</b>				
<b>First Semester</b>				
ENV 101	Introduction to Environmental Technology I	3	3	4
ENV 220	Environmental Problems	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	6	3	7
<b>Second Semester</b>				
ENV 102	Introduction to Environmental Technology II	3	3	4
ENV 227	Environmental Law	<u>2</u>	<u>0</u>	<u>2</u>
	Total .....	5	3	6
<b>Third Semester</b>				
ENV 110	Introduction to Water and Waste Water Treatment Technology	2	2	3
ENV 160	Introduction to Solid Waste Management	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	5	2	6
<b>Fourth Semester</b>				
ENV 120	Introduction to Air Pollution	2	2	3
ENV 180	Introduction to Hazardous Waste	<u>2</u>	<u>0</u>	<u>2</u>
	Total .....	4	2	5
Total Hours Required for Career Studies Certificate.....				24

continued

## **FIREFIGHTING AND PREVENTION**

(Career Studies)  
051

**Occupational Objectives:** Training for positions in fire prevention and suppression, fire protection engineering, safety engineering, insurance inspection and investigation, industrial safety, and building inspection.

<b>Firefighting and Prevention Curriculum</b>					
<b>Course Number</b>	<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>	
<b>First Semester</b>					
ENG 111	English Composition	3	0	3	
PSY 120	Human Relations	3	0	3	
FIR 106	Fire Suppression Methods and Operations	3	0	3	
<b>Second Semester</b>					
FIR 111	Hazardous Materials I	3	0	3	
FIR 125	Fire Service Administration	3	0	3	
<b>Third Semester</b>					
FIR 221	Building Construction and Codes	3	2	4	
FIR 230	Investigation Procedures	<u>3</u>	<u>0</u>	<u>3</u>	
Total .....		21	2	22	
Total Minimum Credits for Certificate .....				22	

## **FOOD SERVICE MANAGEMENT**

(Career Studies)  
061

**Purpose:** The curriculum is designed to provide an individual with a sufficient level of knowledge, understanding, and proficiency to perform tasks in the supervision and management of professional Food Service operations.

**Occupational Objectives:** Management, training, or supervisory positions in country clubs, restaurants, health departments, hospitals, nursing homes, public and private school systems, and any institutional food settings.



<b>Food Service Management Curriculum Two-Year Curriculum</b>					
<b>Course Number</b>	<b>Course Title</b>		<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
<b>First-Year Curriculum</b>					
<b>First Semester</b>					
SPD 105	Oral Communications		3	0	3
HRI 120	Principles of Food Preparation		<u>3</u>	<u>3</u>	<u>4</u>
	Total .....		6	3	7
<b>Second Semester</b>					
HRI 158	Sanitation and Safety		3	0	3
PSY 120	Human Relations		<u>3</u>	<u>0</u>	<u>3</u>
	Total .....		6	0	6
<b>Second-Year Curriculum</b>					
<b>Third Semester</b>					
HRI 221	Quantity Food Preparation I		3	3	4
HLT 230	Principle of Nutrition & Human Development		<u>3</u>	<u>0</u>	<u>3</u>
	Total .....		6	3	7
<b>Fourth Semester</b>					
BUS 111	Principles of Supervision		3	0	3
CIS 150	Intro. to Microcomputer Software		<u>3</u>	<u>0</u>	<u>3</u>
	Total .....		6	0	6
Total Minimum Credits for Certificate .....					26

## **GENERAL STUDIES**

### *ASSOCIATE IN SCIENCE DEGREE*

699

**Purpose:** The curriculum is designed for students who are uncertain about their vocational or educational goals. It offers sufficient flexibility so that students may take courses that are accepted in most four-year colleges and universities in a wide number of baccalaureate degree programs. It also provides greater opportunity than that offered in other college transfer programs for the student to take courses that emphasize areas of academic strength and interest. Students are urged to acquaint themselves with the requirements of the major department in the college or university to which transfer is contemplated and further to consult with their faculty advisors or

counselors at Virginia Western in planning their programs and selecting their electives. In order to prepare for junior-class standing at a four-year college or university, the student usually must complete a program of study at the community college that is comparable in length and course content to the first two years of the program at the four-year institution.

**Curriculum Admission Guidelines:** 4 units of English; algebra I, geometry, and algebra II; 1 unit of laboratory science; and 1 unit of social science. Developmental courses may be recommended for students with deficiencies in English, reading, and/or mathematics.

**General Studies Curriculum**

<b>Course Number</b>	<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
ENG 111	College Composition I	3	0	3
STD 100	Orientation	1	0	1
HIS <sup>1</sup> 121	United States History I (or HIS 101)	3	0	3
MTH <sup>2</sup> 151	Mathematics for the Liberal Arts I (or MTH 163)	3	0	3
E <sup>3</sup>	Natural Science Elective	3	3	4
CIS 150	Introduction to Microcomputer Software	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	16	3	17
<b>Second Semester</b>				
ENG 112	College Composition II	3	0	3
HIS <sup>1</sup> 122	United States History II (or HIS 102)	3	0	3
MTH <sup>2</sup> 152	Mathematics for the Liberal Arts II or Elective (or MTH 271 or Elective)	3	0	3
E <sup>3</sup>	Natural Science Elective	3	3	4
E <sup>4</sup>	Elective	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	15	3	16
<b>Second-Year Curriculum</b>				
<b>Third Semester</b>				
ENG 241	Survey of American Literature I or			
ENG 243	Survey of English Literature I	3	0	3
E <sup>5</sup>	Social Science Elective	3	0	3
SPD 100	Principles of Public Speaking (or SPD 105)	3	0	3
E <sup>6</sup>	Humanities Elective	3	0	3
E <sup>4</sup>	Elective	3	0	3
HLT <sup>7</sup> 110	Concepts of Personal and Community Health (or PED)	<u>2</u>	<u>0</u>	<u>2</u>
	Total .....	17	0	17
<b>Fourth Semester</b>				
ENG 242	Survey of American Literature II or			
ENG 244	Survey of English Literature II	3	0	3
E <sup>5</sup>	Social Science Elective	3	0	3
E <sup>6</sup>	Humanities Elective	3	0	3
E <sup>4</sup>	Elective	3	0	3
E <sup>4</sup>	Elective	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	15	0	15
Total Minimum Credits for Degree .....				65

<sup>1</sup> A two-semester sequence of HIS 121-122 or HIS 101-102 must be completed.

<sup>2</sup> MTH 151 or 163 must be completed. If only one semester of math is taken, an elective must be selected from the "Approved List of Transfer Electives" at the beginning of the Programs of Study section. The completion of a two-semester sequence of MTH 151-152 or MTH 163-271 is recommended for transfer to most four-year colleges. Students are urged to check the mathematics requirement of the four-year college to which they plan to transfer to determine the proper mathematics courses to be taken at the community college.

<sup>3</sup> A two-semester sequence selected from BIO 101-102, CHM 111-112, GOL 105-106, or PHY 201-202 must be completed.

- <sup>4</sup> Electives must be selected from the "Approved List of Transfer Electives" at the beginning of the Programs of Study section. A two-semester sequence of the same course is recommended for transfer to most four-year institutions.
- <sup>5</sup> Social science electives must be selected from the "Approved List of Transfer Electives" at the beginning of the Programs of Study section. A two-semester sequence of the same course is recommended for transfer to most four-year institutions.
- <sup>6</sup> Humanities electives must be selected from the "Approved List of Transfer Electives" at the beginning of the Programs of Study section. A two-semester sequence of the same course is recommended for transfer to most four-year institutions.
- <sup>7</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

## HEALTH TECHNOLOGY

(Career Studies)  
059

**Purpose:** The curriculum is designed to provide students with a course of study that will help prepare them for admission to and success in health technology degree programs. Graduates from the program will have completed prerequisites and support courses that are required in Virginia Western's associate degree programs in nursing, dental hygiene, and radiography. Completion of a career studies program does not guarantee admission to an associate degree program.

**Curriculum Admissions Requirements:** High school diploma or GED; four units of high school English; one unit each of high school (or college) biology and chemistry; Algebra I, Geometry, and Algebra II for radiography applicants; Algebra I and Algebra II for dental hygiene applicants; Algebra I and either Geometry or Algebra II for Nursing applicants. Science and mathematics prerequisites must be completed with a grade of "C" or better. Developmental courses may be taken to replace high school prerequisites.

### Health Technology Core Curriculum

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
CIS 116	Computer and Information Systems (or CIS 199)	1	0	1
ENG 111	College Composition I (or ENG 101)	3	0	3
HLT <sup>1</sup> 143	Medical Terminology I	3	0	3
PSY 201	Introduction to Psychology I	3	0	3
SPD 100	Principles of Public Speaking (or ENG 102)	3	0	3
STD 100	Orientation	<u>1</u>	<u>0</u>	<u>1</u>
	Total .....	14	0	14

### Pre-Dental Hygiene Option

BIO 141	Human Anatomy & Physiology I	3	2	4
BIO 142	Human Anatomy & Physiology II	3	2	4
NAS 185	Microbiology	3	2	4
SOC 201	Introduction to Sociology I (or SOC 215)	<u>3</u>	0	<u>3</u>
	Total .....	12	6	15
Total Credits for Certificate .....				29

**Pre-Nursing Option**

BIO	141	Human Anatomy & Physiology I	3	2	4
BIO	142	Human Anatomy & Physiology II	3	2	4
NAS	185	Microbiology	3	2	4
PSY	215	Abnormal Psychology	<u>3</u>	<u>0</u>	<u>3</u>
Total .....			12	6	15
Total Credits for Certificate .....					29

**Pre-Radiography Option**

BIO	145	Human Anatomy & Physiology for the Health Sciences	4	3	5
MTH	126	Mathematics for Allied Health	2	0	2
E		Social Science Elective	3	0	3
E		General Elective	<u>3</u>	<u>0</u>	<u>3</u>
Total .....			12	3	13
Total Credits for Certificate .....					27

*1 Highly recommended for all students, but dental hygiene and nursing applicants may substitute a general elective.*

**HORTICULTURE TECHNOLOGY**

*ASSOCIATE IN  
APPLIED SCIENCE DEGREE  
335*

**Purpose:** The horticulture program is designed to prepare students for employment in the horticulture industry or a related field and to provide training for those who are currently working in the field and want to improve and upgrade their existing knowledge and skills. The major part of the curriculum is devoted to specialized horticulture courses and to the development of technical and communication skills necessary for a successful career. During the second year of the two-year program, the student has the option of specializing in either Interior Landscaping/Floriculture or Landscape. Three short programs, Floral Design and Indoor Plant Care, Landscaping and Outdoor Plant Care, and Plant Propagation and Production are available through the college's Career Studies Certificate program for individuals who are not interested in completing the full two-year program.

**Occupational Objectives:** Manager or employee in a nursery or greenhouse; grounds maintenance operator or supervisor; floral designer or manager of a florist shop; and employee in a retail horticulture business or a related industry.

**Cooperative Education:** Students in this program will be provided an opportunity to obtain on-the-job training through cooperative arrangements between the college and prospective employers.

**Curriculum Admission Guidelines:** Proficiency in high school English and 1 unit of high school algebra. Deficiencies may be removed through developmental studies.

**Transfer Arrangements:** Specific details about transfer arrangements can be obtained from the horticulture department head.

**Horticulture Technology Curriculum  
(AAS Degree)**

**Interior Landscaping/Floriculture Option**

<b>Course Number</b>	<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
ENG <sup>1</sup> 101	Practical Writing I	3	0	3
HRT 100	Introduction to Horticulture	2	2	3
HRT 247	Indoor Plants	1	2	2
MTH 120	Introduction to Mathematics	3	0	3
E <sup>2</sup>	Social Science Elective	3	0	3
HLT/PED <sup>3</sup>	Health or Physical Education	1-2	0	1-2
STD 100	Orientation	1	0	1
Total .....		14-15	4	16-17
<b>Second Semester</b>				
BUS 125	Applied Business Mathematics	3	0	3
ENG <sup>1</sup> 102	Practical Writing II	3	0	3
HRT 127	Horticultural Botany	2	2	3
HRT 236	Interior Landscaping	1	2	2
E <sup>2</sup>	Social Science Elective	3	0	3
HLT/PED <sup>3</sup>	Health or Physical Education	1-2	0	1-2
Total .....		13-14	4	15-16
<b>Second-Year Curriculum</b>				
<b>Third Semester</b>				
BUS 165	Small Business Management	3	0	3
HRT 115	Plant Propagation	2	2	3
HRT 121	Greenhouse Crop Production I	2	2	3
HRT 207	Plant Pest Management	2	2	3
HRT 260	Introduction to Floral Design	2	2	3
HRT 267	Silk and Dried Flower Arranging	1	2	2
Total .....		12	10	17
<b>Fourth Semester</b>				
CIS 199	Microcomputer Seminar	1	0	1
HRT 205	Soils	2	2	3
HRT 265	Professional Floral Design and Shop Management	2	2	3
HRT 285	Management of a Hort. Business	2	2	3
HRT 297	Cooperative Education (or HRT 296)	0	6	2
MKT 100	Principles of Marketing (or MKT 110)	3	0	3
E	Elective	2-3	0	2-3
Total .....		10-11	10	17-18
Total Minimum Credits for Degree .....				65

<sup>1</sup> ENG 111-112 and SPD 100 as elective should be taken by students planning to transfer.

<sup>2</sup> A two-semester sequence in social science or two of the following: PSY 120, ECO 120, or PLS 130.

<sup>3</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

**Horticulture Technology Curriculum  
(AAS Degree)**

**Landscape Option**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
ENG' 101	Practical Writing I	3	0	3
HRT 100	Introduction to Horticulture	2	2	3
HRT 201	Landscape Plant Materials I	2	2	3
MTH 120	Introduction to Mathematics	3	0	3
E <sup>2</sup>	Social Science Elective	3	0	3
HLT/PED <sup>3</sup>	Health or Physical Education	1-2	0	1-2
STD 100	Orientation	<u>1</u>	<u>0</u>	1
	Total .....	15-16	4	17-18
<b>Second Semester</b>				
BUS 125	Applied Business Mathematics	3	0	3
ENG' 102	Practical Writing II	3	0	3
HRT 127	Horticultural Botany	2	2	3
HRT 202	Landscape Plant Materials II	2	2	3
E <sup>2</sup>	Social Science Elective	3	0	3
HLT/PED <sup>3</sup>	Health or Physical Education	<u>1-2</u>	<u>0</u>	<u>1-2</u>
	Total .....	14-15	4	16-17
<b>Second-Year Curriculum</b>				
<b>Third Semester</b>				
BUS 165	Small Business Management	3	0	3
CIS 199	Microcomputer Seminar	1	0	1
HRT 115	Plant Propagation	2	2	3
HRT 207	Plant Pest Management	2	2	3
HRT 231	Planting Design I	2	2	3
E	Elective	<u>2-3</u>	<u>0</u>	<u>2-3</u>
	Total .....	12-13	6	15-16
<b>Fourth Semester</b>				
HRT 205	Soils	2	2	3
HRT 232	Planting Design II (or HRT 269)	2	2	3
HRT 275	Landscape Construction and Maintenance	2	2	3
HRT 285	Management of a Hort. Business	2	2	3
HRT 297	Cooperative Education (or HRT 296)	0	6	2
MKT 100	Principles of Marketing (or MKT 110)	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	11	14	17
Total Minimum Credits for Degree .....				65

<sup>1</sup> ENG 111-112 and SPD 100 as elective should be taken by students planning to transfer.

<sup>2</sup> A two-semester sequence in social science or two of the following: PSY 120, ECO 120, or PLS 130.

<sup>3</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

**HORTICULTURE CAREER STUDIES PROGRAMS**

*Floral Design and Indoor Plant Care  
(Career Studies)  
013*

**Purpose:** This curriculum is designed to prepare students for entry level positions in floral and indoor plant care businesses and to upgrade the skills of those currently employed in the industry. All of the courses offered in this program can be applied to the AAS degree in Horticulture Technology (Interior Landscaping/Floriculture Option).

**Occupational Objectives:** Floral designer, interior landscape technician.

**Curriculum Admission Guidelines:** Student must meet the general requirements for admission to the college.

<b>Floral Design and Indoor Plant Care Curriculum</b>					
<b>Course Number</b>		<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
<b>First Semester</b>					
HRT 207		Plant Pest Management	2	2	3
HRT 247		Indoor Plants	1	2	2
HRT 260		Introduction to Floral Design	2	2	3
HRT 267		Silk and Dried Flower Arranging	<u>1</u>	<u>2</u>	<u>2</u>
		Total .....	6	8	10
<b>Second Semester</b>					
HRT 236		Interior Landscaping	1	2	2
HRT 265		Professional Floral Design and Shop Management	2	2	3
E <sup>1</sup>		Horticultural Elective	<u>2</u>	<u>2</u>	<u>3</u>
		Total .....	5	6	8
Total Minimum Credits for Certificate.....					18

<sup>1</sup> To be selected with departmental approval.

**Landscaping and Outdoor Plant Care**

*(Career Studies)  
014*

**Purpose:** This curriculum is designed to prepare students for entry level positions in landscaping businesses and to upgrade the skills of those currently employed in the industry. All of the courses offered in this program can be applied to the AAS degree in Horticulture Technology (Landscape Option).

**Occupational Objectives:** Landscape designer, landscape technician.

**Curriculum Admission Guidelines:** Student must meet the general requirements for admission to the college.

<b>Landscaping and Outdoor Plant Care</b>					
Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits	
<b>Summer Session</b>					
HRT 201	Landscape Plant Materials I	<u>2</u>	<u>2</u>	<u>3</u>	
	Total .....	2	2	3	
<b>First Semester</b>					
HRT 207	Plant Pest Management	2	2	3	
HRT 231	Planting Design I	<u>2</u>	<u>2</u>	<u>3</u>	
	Total .....	4	4	6	
<b>Second Semester</b>					
HRT 202	Landscape Plant Materials II	2	2	3	
HRT 232	Planting Design II (or HRT 269)	2	2	3	
HRT 275	Landscape Construction and Maintenance	2	<u>2</u>	<u>3</u>	
	Total .....	6	6	9	
Total Minimum Credits for Certificate .....					18

### **Plant Propagation and Production**

*(Career Studies)*  
010

**Purpose:** This curriculum is designed to prepare students for entry level positions in greenhouse, nursery, and garden center businesses and to upgrade the skills of those currently employed in the industry. All of the courses offered in this program can be applied to the AAS degree in Horticulture Technology (Interior Landscaping/Floriculture Option).

**Occupational Objective:** Assistant grower, wholesale and retail salesperson, production technician.

**Curriculum Admission Guidelines:** Student must meet the general requirements for admission to the college.

<b>Plant Propagation and Production Curriculum</b>					
Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits	
<b>First Semester</b>					
HRT 115	Plant Propagation	2	2	3	
HRT 121	Greenhouse Crop Production	2	2	3	
HRT 207	Plant Pest Management	<u>2</u>	<u>2</u>	<u>3</u>	
	Total .....	6	6	9	
<b>Second Semester</b>					
HRT 205	Soils	2	2	3	
HRT 285	Management of a Hort. Business	2	2	3	
E	Horticultural Elective	<u>2</u>	<u>2</u>	<u>3</u>	
	Total .....	6	6	9	
Total Minimum Credits for Certificate .....					18



## INDUSTRIAL TECHNOLOGY

(Career Studies)  
058

**Purpose:** The curriculum is designed to upgrade the technical skills or expand the technical knowledge of existing employees; retrain employees whose job skills have become obsolete, or prepare potential employees for entry level positions.

Graduates from this program will complete 6 semester hours in basic education (communication and human relations skills) and 12-19 semester hours in technical coursework.

**Occupational Objectives:** Entry level or advancement opportunities in a broad range of technical trades. Typical of job titles include Electronic Service Technician, Industrial Electrician, Maintenance Mechanic, Machine Tool Operator, or Welder and Cutter.

**Curriculum Admission Guidelines:** Proficiency in high school English and mathematics (1 unit of Algebra).

<b>Industrial Technology (Career Studies)</b>				
Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
E	Social Science Elective	3	0	3
ENG 101	Practical Writing I	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	6	0	6
<b>(ELECTRICAL OPTION)</b>				
BLD 111	Blueprint Reading	2	3	3
ELE 133	Practical Electricity I	2	2	3
ELE 134	Practical Electricity II	2	2	3
ELE 147	Electrical Power and Controls	2	2	3
ELE 239	Programmable Controllers	2	0	2
ELE 138	National Electrical Code	<u>2</u>	<u>0</u>	<u>2</u>
	Total .....	12	9	16
Total Credits for Certificate .....				22
<b>(ELECTRONICS OPTION)</b>				
ETR 113	D.C. and A.C. Fundamentals	3	3	4
ETR 148	Amplifiers and Integrated Circuits	3	3	4
ETR 281	Digital Systems I	2	3	3
ELE 119	Electrical Shop Practices	<u>0</u>	<u>3</u>	<u>1</u>
	Total .....	8	12	12
Total Credits for Certificate .....				18
<b>(MAINTENANCE OPTION)</b>				
BLD 111	Blueprint Reading I	2	2	3
ELE 133	Practical Electricity I	2	2	3
ELE 134	Practical Electricity II	2	2	3
AIR 121	Air Conditioning & Refrigeration I	2	2	3
AIR 122	Air Conditioning & Refrigeration II	2	2	3
MEC 162	Hydraulics and Pneumatics	3	0	3
WEL 120	Fundamentals of Welding	<u>1</u>	<u>3</u>	<u>2</u>
	Total .....	14	13	20
Total Credits for Certificate .....				26

**(WELDING OPTION)**

DRF 161	Blueprint Reading	1	3	2
WEL 120	Fundamentals of Welding	1	3	2
WEL 121	ARC Welding	1	3	2
WEL 135	Inert Gas Welding	1	3	2
WEL 145	Welding Metallurgy	3	0	3
MAC 131	Machine Lab I	1	<u>3</u>	<u>2</u>
	Total .....	8	15	13
Total Credits for Certificate .....				19

**(METAL PROCESSING OPTION)**

DRF 161	Blueprint Reading	1	3	2
MAC 131	Machine Lab I	1	3	2
MEC 118	Automated Manufacturing Technology	1	3	2
WEL 145	Welding Metallurgy	3	0	3
WEL 120	Fundamentals of Welding	1	3	2
IND 140	Quality Control	<u>2</u>	0	<u>2</u>
	Total .....	9	12	13
Total Credits for Certificate .....				19

**LEGAL ASSISTANT**

*(Certificate)*  
261

**Occupational Objectives:** Assist lawyers in legal research and in daily routine matters.

<b>Legal Assistant Curriculum</b>				
<b>Course Number</b>	<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
ECO 120	Survey of Economics	3	0	3
PLS 135	American National Politics	3	0	3
STD 100	Orientation	1	0	1
LGL 110	Intro. to Law and Legal Assistant	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	10	0	10
<b>Second Semester</b>				
LGL 117	Family Law	3	0	3
LGL 125	Legal Research	3	0	3
LGL 126	Legal Writing	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	9	0	9
<b>Second-Year Curriculum</b>				
<b>Third Semester</b>				
LGL 115	Real Estate Law	3	0	3
LGL 225	Estate Planning and Probate	3	0	3
LGL 200	Ethics for the Legal Assistant	<u>1</u>	<u>0</u>	<u>1</u>
	Total .....	7	0	7
<b>Fourth Semester</b>				
LGL 235	Aspects of Business Organizations	3	0	3
LGL 237	Law of Income Taxation	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	6	0	6
Total Minimum Credits for Certificate .....				32

**LEGAL ASSISTING**

*ASSOCIATE IN  
APPLIED SCIENCE DEGREE  
260*

**Purpose:** The curriculum is designed to provide an individual with a sufficient level of knowledge, understanding, and proficiency to perform tasks in meeting the needs of clients that can be performed by a trained paraprofessional working under the direction and supervision of a lawyer. A Legal Assistant will have a basic understanding of the general process of American law and will have the knowledge and proficiency to perform specific tasks under the supervision

of a lawyer in the fields of criminal and civil law.

**Occupational Objectives:** Include employment in public and in private, both individual and corporate, law-related activities, organizations, and agencies.

**Curriculum Admissions Guidelines:** Proficiency in high school English and completion of high school or college mathematics equivalent to Algebra I.

<b>Legal Assisting Curriculum</b>					
<b>Course Number</b>	<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>	
<b>First-Year Curriculum</b>					
<b>First Semester</b>					
ACC 211	Accounting I	3	0	3	
ACC 213	Principles of Accounting Lab I	0	2	1	
ENG 111	College Composition	3	0	3	
MTH 120	Introduction to Mathematics	3	0	3	
LGL 110	Introduction to Law & the Legal Assistant	3	0	3	
CIS 150	Introduction to Microcomputer Software	3	0	3	
STD 100	Orientation	<u>1</u>	<u>0</u>	<u>1</u>	
	Total .....	16	2	17	
<b>Second Semester</b>					
HLT <sup>1</sup> 110	Concepts of Personal & Community Health	1-2	0	2	
SPD 105	Oral Communications	3	0	3	
LGL 125	Legal Research	3	0	3	
LGL 126	Legal Writing	3	0	3	
LGL	Elective (Legal Administration)	3	0	3	
PSY 120	Human Relations	3	<u>0</u>	<u>3</u>	
	Total .....	16-17	0	17	
<b>Second-Year Curriculum</b>					
<b>Third Semester</b>					
LGL 200	Ethics for the Legal Assistant	1	0	1	
E	Social Science Elective	3	0	3	
LGL 117	Family Law	3	0	3	
LGL 225	Estate Planning and Probate	3	0	3	
LGL 115	Real Estate Law	3	0	3	
LGL 230	Legal Transactions	<u>3</u>	<u>0</u>	<u>3</u>	
	Total .....	16	0	16	

**Fourth Semester**

E <sup>2</sup>		Elective	3	0	3
LGL	235	Legal Aspects of Business Organizations	3	0	3
LGL	237	Law Income Taxation	3	0	3
LGL	226	Real Estate Abstracting	3	0	3
E		Legal Administration Elective	<u>3</u>	<u>0</u>	<u>3</u>
		Total .....	15	0	15
Total Minimum Credits for Degree .....					65

<sup>1</sup> Two credits of Health (HLT) or Physical Education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.  
<sup>2</sup> Elective may be any 100-level or 200-level course.

**LIBERAL ARTS**

**ASSOCIATE IN ARTS DEGREE**  
648

**Purpose:** The curriculum is designed for persons who plan to transfer to a four-year program to complete a baccalaureate degree, usually the Bachelor of Arts degree in the liberal arts or social sciences. Students in this program may wish to major in the following fields at four-year institutions: English, foreign language, humanities, journalism, philosophy, pre-law, social sciences, or speech/drama.

Students are urged to acquaint themselves with the requirements of the major department in the college or university to which transfer is contemplated and also to consult with their faculty advisor or counselor at Virginia Western in planning their program and selecting electives. In order to prepare for junior-class standing at a four-year college or university, the student usually must

complete a program of study at the community college that is comparable in length and course content to the first two years of the program at the four-year institution.

**Special Curriculum Admission Guidelines:** 4 units of English; algebra I, geometry, and algebra II; 1 unit of laboratory science; and 1 unit of history. The remaining units are elective courses, but at least two units of a foreign language are recommended. Students are urged to check the mathematics requirement of the four-year college or university to which they plan to transfer to determine the proper mathematics courses to be taken in the community college. Developmental courses may be recommended for students with deficiencies in English, reading, and/or mathematics.

**Liberal Arts Curriculum**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
ENG 111	College Composition I	3	0	3
STD 100	Orientation	1	0	1
HIS 101	History of Western Civilization I (or HIS 121)	3	0	3
MTH 151	Mathematics for the Liberal Arts I (or MTH 163)	3	0	3
E <sup>1</sup>	Natural Science Elective	3	3	4
E <sup>2</sup>	Foreign Language Elective	<u>4</u>	0	<u>4</u>
	Total .....	17	3	18

**Second Semester**

ENG 112	College Composition II	3	0	3
HIS 102	History of Western Civilization II (or HIS 122)	3	0	3
MTH 152	Mathematics for the Liberal Arts II (or MTH 271)	3	0	3
E <sup>1</sup>	Natural Science Elective	3	3	4
E <sup>2</sup>	Foreign Language Elective	<u>4</u>	<u>0</u>	<u>4</u>
	Total .....	16	3	17

**Second-Year Curriculum**

**Third Semester**

ENG 241	Survey of American Literature I (or ENG 243)	3	0	3
E <sup>2</sup>	Foreign Language Elective	4	0	4
E <sup>3</sup>	Social Science Elective	3	0	3
SPD 100	Principles of Public Speaking	3	0	3
CIS 150	Introduction To Microcomputer Software	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	16	0	16

**Fourth Semester**

ENG 242	Survey of American Literature II (or ENG 244)	3	0	3
E <sup>2</sup>	Foreign Language Elective	4	0	4
E <sup>3</sup>	Social Science Elective	3	0	3
E <sup>4</sup>	Elective	3	0	3
HLT <sup>5</sup> 110	Concepts of Personal and Community Health (or PED)	<u>2</u>	<u>0</u>	<u>2</u>
	Total .....	15	0	15

Total Minimum Credits for Degree ..... 66

<sup>1</sup> Natural science elective must include a two-semester sequence of BIO 101-102, CHM 111-112, GOL 105-106, or PHY 201-202.

<sup>2</sup> Foreign language electives must be selected from French, German, or Spanish. Completion of intermediate level is required for graduation. If the beginning level is not taken because of prior learning, 8 credit hours must be made up from the "Approved List of Transfer Electives" at the beginning of the Programs of Study section.

<sup>3</sup> Social science electives must be chosen from the "Approved List of Transfer Electives" at the beginning of the Programs of Study section. A two-semester sequence is normally recommended for transfer to a four-year institution.

<sup>4</sup> Elective must be chosen from the "Approved List of Transfer Electives" at the beginning of the Programs of Study section.

<sup>5</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

**LIBERAL ARTS**

**ASSOCIATE IN ARTS DEGREE**  
*(Specialization: Fine Arts)*  
 648-01

**Purpose:** The curriculum is designed for persons who plan to transfer to a four-year program in a professional art school or to a four-year program in fine arts. Students who are interested in art but who do not elect immediately to transfer will also find this program suited to their needs. Students are urged to acquaint themselves with the requirements of the major department in the college or university to which transfer is contemplated and also to consult with their faculty advisor or counselor at Virginia Western in planning their program of study and selecting electives. In order to prepare for junior-class standing at a four-year

college or university, the student usually must complete a program of study at the community college that is comparable in length and course content to the first two years of the program at the four-year institution.

**Curriculum Admission Guidelines:** A satisfactory aptitude in visual art is preferred for entry into the art program. High school record should include 4 units of English; algebra I, geometry and algebra II; 1 unit of laboratory science; and 1 unit of social science. Developmental courses may be recommended for students with deficiencies in English, reading, and/or mathematics.

<b>Liberal Arts Fine Arts Curriculum</b>					
<b>Course Number</b>	<b>Course Title</b>		<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
<b>First-Year Curriculum First Semester</b>					
ART 121		Drawing I	1	4	3
E'		Foreign Language Elective	4	0	4
MTH 151		Mathematics for the Liberal Arts I (or MTH 163)	3	0	3
ENG 111		College Composition I	3	0	3
STD 100		Orientation	1	0	1
HIS 101		History of Western Civilization I (or HIS 121)	<u>3</u>	<u>0</u>	<u>3</u>
		Total .....	15	4	17
<b>Second Semester</b>					
ART 122		Drawing II	1	4	3
E'		Foreign Language Elective	4	0	4
MTH 152		Mathematics for the Liberal Arts II (or MTH 271)	3	0	3
ENG 112		College Composition II	3	0	3
HIS 102		History of Western Civilization II (or HIS 122)	3	0	3
HLT <sup>2</sup> 110		Concepts of Personal and Community Health (or PED)	<u>2</u>	<u>0</u>	<u>2</u>
		Total .....	16	4	18

**Second-Year Curriculum  
Third Semester**

ART 101	History and Appreciation of Art I	3	0	3
ART 131	Fundamentals of Design I	1	4	3
E <sup>3</sup>	Social Science Elective	3	0	3
E <sup>4</sup>	Natural Science Elective	3	3	4
ENG 241	Survey of American Literature I or			
ENG 243	Survey of English Literature I	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	13	7	16

**Fourth Semester**

ART 132	Fundamentals of Design II	1	4	3
E <sup>3</sup>	Social Science Elective	3	0	3
E <sup>4</sup>	Natural Science Elective	3	3	4
E <sup>5</sup>	Elective	3	0	3
SPD 100	Principles of Public Speaking (or SPD 105)			
CIS 116	Computers and Information Systems	<u>1</u>	<u>0</u>	<u>1</u>
	Total .....	14	7	17

Total Minimum Credits for Degree ..... 68

<sup>1</sup> Foreign language electives must be chosen from French, German, or Spanish. Completion of beginning level required for graduation. Students may take the intermediate level to meet the foreign language requirement if they have completed two years of a high school foreign language with at least a "B" average.

<sup>2</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

<sup>3</sup> Social science electives must be chosen from the "Approved List of Transfer Electives" at the beginning of the Programs of Study section. A two-semester sequence is normally recommended for transfer to a four-year institution.

<sup>4</sup> A two-semester sequence of natural science must be chosen from BIO 101-102, CHM 111-112, GOL 105-106, or PHY 201-202.

<sup>5</sup> Electives must be chosen from the "Approved List of Transfer Electives" at the beginning of the Programs of Study section.

**MANAGEMENT**

*(Banking and Finance, Real Estate, Merchandising)*

ASSOCIATE IN  
APPLIED SCIENCE DEGREE  
212

**Purpose:** The curriculum is designed for persons who seek full-time employment in business and industry upon completion of the community college curriculum. Individuals who are seeking initial employment in a managerial position and those presently in management who are seeking promotion may benefit from the curriculum.

**Occupational Objectives:** Management training, supervision, real estate sales and

finance, retail credit, rate analyst, purchase agent, sales supervisor, and other related traffic and transportation occupations.

**Curriculum Admission Guidelines:**

Minimum of two units of high school math, one of which must be algebra, or the equivalent, and proficiency in high school English. Developmental courses may be recommended for students with deficiencies in English and mathematics.

<b>Management Curriculum</b>					
Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits	
<b>First-Year Curriculum</b>					
<b>First Semester</b>					
ACC 211	Principles of Accounting I	3	0	3	
ACC 213	Principles of Accounting Lab I	0	2	1	
BUS 100	Introduction to Business	3	0	3	
ENG 111	College Composition I	3	0	3	
MTH 120	Introduction to Mathematics (or MTH 163)	3	0	3	
OFT 115	Keyboarding for Information Processing (or OFT 111)	3	0	3	
STD 100	Orientation	<u>1</u>	<u>0</u>	<u>1</u>	
	Total .....	16	2	17	
<b>Second Semester</b>					
ACC 212	Principles of Accounting II	3	0	3	
ACC 214	Principles of Accounting Lab II	0	2	1	
BUS 125	Applied Business Mathematics (or MTH 271)	3	0	3	
BUS 150	Principles of Management (or BUS 111 or 165)	3	0	3	
CIS 150	Introduction to Microcomputer Software	3	0	3	
HLT <sup>1</sup> 110	Concepts of Personal and Community Health (or PED elective)	2	0	2	
SPD 105	Oral Communication	<u>3</u>	<u>0</u>	<u>3</u>	
	Total .....	16	2	18	
<b>Second-Year Curriculum</b>					
<b>Third Semester</b>					
ACC 261	Principles of Federal Taxation I	3	0	3	
BUS 205	Human Resource Management	3	0	3	
BUS 225	Applied Business Statistics	3	0	3	
BUS 241	Business Law I	3	0	3	
ECO 201	Principles of Economics I	<u>3</u>	<u>0</u>	<u>3</u>	
	Total .....	15	0	15	
<b>Fourth Semester</b>					
ACC 215	Computerized Accounting	3	0	3	
BUS 155	Applied Management Principles	3	0	3	
FIN 215	Financial Management	3	0	3	
MKT 100	Principles of Marketing	3	0	3	
ECO <sup>2</sup> 202	Principles of Economics II	3	0	3	
E <sup>3</sup>	Elective	<u>3</u>	<u>0</u>	<u>3</u>	
	Total .....	18	0	18	
Total Minimum Credits for Degree .....				68	

<sup>1</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

<sup>2</sup> An elective may be substituted for ECO 202; the elective must be selected from history, political science, psychology, sociology, or social science.

<sup>3</sup> Elective may be any 100 or above level course.



**Management Curriculum  
(Banking and Finance)**

<b>Course Number</b>	<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
ACC 211	Principles of Accounting I	3	0	3
ACC 213	Principles of Accounting Lab I	0	2	1
BUS 100	Introduction to Business	3	0	3
ENG 111	College Composition I	3	0	3
MTH 120	Introduction to Mathematics (or MTH 163)	3	0	3
OFT 115	Keyboarding for Information Processing (or OFT 111)	3	0	3
STD 100	Orientation	1	0	1
	<b>Total .....</b>	<b>16</b>	<b>2</b>	<b>17</b>
<b>Second Semester</b>				
ACC 212	Principles of Accounting II	3	0	3
ACC 214	Principles of Accounting Lab II	0	2	1
BUS 125	Applied Business Mathematics (or MTH 271)	3	0	3
CIS 150	Introduction to Microcomputer Software	3	0	3
FIN 110	Principles of Banking (or FIN 108)	3	0	3
HLT <sup>1</sup> 110	Concepts of Personal and Community Health (or PED elective)	2	0	2
SPD 105	Oral Communication	3	0	3
	<b>Total .....</b>	<b>17</b>	<b>2</b>	<b>18</b>
<b>Second-Year Curriculum</b>				
<b>Third Semester</b>				
ACC 261	Principles of Federal Taxation I	3	0	3
BUS 225	Applied Business Statistics	3	0	3
BUS 241	Business Law I	3	0	3
ECO 201	Principles of Economics I	3	0	3
BUS 150	Principles of Management	3	0	3
	<b>Total .....</b>	<b>15</b>	<b>0</b>	<b>15</b>
<b>Fourth Semester</b>				
ACC 215	Computerized Accounting	3	0	3
BUS 155	Applied Management Principles	3	0	3
FIN 215	Financial Management	3	0	3
MKT 100	Principles of Marketing	3	0	3
ECO <sup>2</sup> 202	Principles of Economics II	3	0	3
E <sup>3</sup>	Elective	3	0	3
	<b>Total .....</b>	<b>18</b>	<b>0</b>	<b>18</b>
<b>Total Minimum Credits for Degree .....</b>				<b>68</b>

<sup>1</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

<sup>2</sup> An elective may be substituted for ECO 202; the elective must be selected from history, political science, psychology, sociology, or social science.

<sup>3</sup> Elective may be any 100 or above level course.

**Management Curriculum  
(Merchandising)**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
ACC 211	Principles of Accounting I	3	0	3
ACC 213	Principles of Accounting Lab I	0	2	1
BUS 100	Introduction to Business	3	0	3
HLT <sup>1</sup> 110	Concepts of Personal and Community Health (or PED elective)	2	0	2
ENG 111	College Composition I	3	0	3
MTH 120	Introduction to Mathematics (or MTH 163)	3	0	3
OFT 115	Keyboarding for Information Processing (or OFT 111)	3	0	3
STD 100	Orientation	<u>1</u>	<u>0</u>	<u>1</u>
	Total .....	18	2	19
<b>Second Semester</b>				
ACC 212	Principles of Accounting II	3	0	3
ACC 214	Principles of Accounting Lab II	0	2	1
BUS 125	Applied Business Mathematics (or MTH 271)	3	0	3
BUS 150	Principles of Management (or BUS 111 or 165)	3	0	3
CIS 150	Introduction to Microcomputer Software	3	0	3
MKT 100	Principles of Marketing	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	15	2	16
<b>Second-Year Curriculum</b>				
<b>Third Semester</b>				
ACC 261	Principles of Federal Taxation I	3	0	3
BUS 225	Applied Business Statistics	3	0	3
BUS 241	Business Law I	3	0	3
MKT 110	Principles of Selling	3	0	3
ECO 201	Principles of Economics I	3	0	3
SPD 105	Oral Communication	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	18	0	18
<b>Fourth Semester</b>				
BUS 155	Applied Management Principles	3	0	3
ECO <sup>2</sup> 202	Principles of Economics II	3	0	3
FIN 215	Financial Management	3	0	3
MKT 220	Principles of Advertising	3	0	3
E <sup>3</sup>	Elective	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	15	0	15
Total Minimum Credits for Degree .....				68

<sup>1</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

<sup>2</sup> An elective may be substituted for ECO 202; the elective must be selected from history, political science, psychology, sociology, or social science.

<sup>3</sup> Elective may be any 100 or above level course.

**Management Curriculum  
(Real Estate)**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
ACC 211	Principles of Accounting I	3	0	3
ACC 213	Principles of Accounting Lab I	0	2	1
BUS 100	Introduction to Business	3	0	3
ENG 111	College Composition I	3	0	3
HLT <sup>1</sup> 110	Concepts of Personal and Community Health (or PED elective)	2	0	2
MTH 120	Introduction to Mathematics (or MTH 163)	3	0	3
OFT 115	Keyboarding for Information Processing (or OFT 111)	3	0	3
STD 100	Orientation	<u>1</u>	<u>0</u>	<u>1</u>
	Total .....	18	2	19
<b>Second Semester</b>				
ACC 212	Principles of Accounting II	3	0	3
ACC 214	Principles of Accounting Lab II	0	2	1
BUS 125	Applied Business Mathematics (or MTH 271)	3	0	3
BUS 150	Principles of Management (or BUS 111 or 165)	3	0	3
CIS 150	Introduction to Microcomputer Software	3	0	3
REA 100	Principals of Real Estate	<u>4</u>	<u>0</u>	<u>4</u>
	Total .....	16	2	17
<b>Second-Year Curriculum</b>				
<b>Third Semester</b>				
ACC 261	Principles of Federal Taxation I	3	0	3
BUS 225	Applied Business Statistics	3	0	3
BUS 241	Business Law I	3	0	3
ECO 201	Principles of Economics I	3	0	3
REA 216	Real Estate Appraisal	3	0	3
SPD 105	Oral Communication	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	18	0	18
<b>Fourth Semester</b>				
ECO <sup>2</sup> 202	Principles of Economics II	3	0	3
MKT 100	Principles of Marketing	3	0	3
REA 217	Real Estate Finance (or FIN 215)	3	0	3
REA 245	Real Estate Law (or LGL 115)	3	0	3
E <sup>3</sup>	Elective	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	15	0	15
Total Minimum Credits for Degree. ....				69

<sup>1</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

<sup>2</sup> A social science elective may be substituted for ECO 202; the elective must be selected from history, political science, psychology, or sociology.

<sup>3</sup> Elective may be any 100 or above level course.

**MECHANICAL ENGINEERING TECHNOLOGY  
(Automated Manufacturing Emphasis)**

*ASSOCIATE IN  
APPLIED SCIENCE DEGREE  
956*

**Purpose:** The Mechanical Engineering Technology program is designed to give the student broad experience and training in the basic concepts of the mechanical engineering technology field. In addition to the general education and fundamental mechanical technology courses (drafting, statics, strength of materials, basic machine tool, etc.), this program offers courses in machine design and in computer numeric control applications. Graduates may seek immediate employment or consider opportunities available to transfer to Bachelor of Technology programs offered by some four-year colleges and universities.

**Occupational Objectives:** The Mechanical Engineering Technician usually serves as a

liaison between the engineering and production departments working with the design and development of engineering plans. Responsibilities may include estimating, inspecting, and testing engineering equipment; operating, maintaining, and repairing engineering plants; research and development; sales and representation; and training and education.

**Curriculum Admission Guidelines:** Proficiency in high school English and 3 units of mathematics (2 units of algebra and 1 unit of geometry or trigonometry). Developmental courses may be recommended for students with deficiencies in English and mathematics.

**Mechanical Engineering Technology Curriculum**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
DRF 111	Technical Drafting I	1	3	2
MEC 113	Materials and Processes of Industry	3	0	3
EGR 100	Engineering Technology Orientation	0	2	1
ENG 111	College Composition I	3	0	3
MAC 131	Machine Lab I	1	3	2
MTH 113	Engineering Technical Mathematics	5	0	5
STD 100	Orientation	<u>1</u>	<u>0</u>	<u>1</u>
	Total .....	14	8	17
<b>Second Semester</b>				
DRF 201	Computer Aided Drafting & Design	1	3	2
ELE 150	A.C. and D.C. Circuit Fundamentals	2	3	3
SPD 100	Principles of Public Speaking	3	0	3
	(or SPD 105)			
MEC 118	Automated Manufacturing Technology	1	3	2
MEC 131	Mechanics I — Statics for Engineering Technology	3	0	3
MTH 114	Engineering Technical Mathematics II	5	<u>0</u>	<u>5</u>
	Total .....	15	9	18

**Second-Year Curriculum  
Third Semester**

DRF 202	Computer Aided Drafting & Design II	1	3	2
HLT/PED <sup>2</sup>	Health or Physical Education	2	0	2
MEC 132	Mechanics II-Strength of Materials	3	0	3
MEC 135	Mechanics Laboratory	0	3	1
MEC 256	Thermodynamics	3	0	3
PHY 201	General College Physics I	3	3	4
E <sup>1</sup>	Social Science Elective	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	15	9	18

**Fourth Semester**

IND 230	Applied Quality Control	2	2	3
MAC 245	Advanced Numerical Control	1	3	2
MEC 213	Machine Design I	4	0	4
PHY 202	General College Physics II	3	3	4
E <sup>3</sup>	Elective	2	0	2
E <sup>1</sup>	Social Science Elective	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	15	8	18

Total Minimum Credits for Degree ..... 71

<sup>1</sup> A two-semester sequence is recommended for students planning to transfer to a baccalaureate degree program.

<sup>2</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

<sup>3</sup> For students who plan to transfer it is suggested that ENG 112 be chosen as an Elective.

**MEDICAL TRANSCRIPTIONIST**

(Certificate)  
286

**Purpose:** The curriculum is designed to prepare selected students to qualify as contributing members of the health-care team.

**Occupational Objectives:** Medical transcriptionists are employed in departments of medical records, radiology, and pathology in hospitals and other health-care facilities. Employment in a physician's office may include medical transcription as well as general office work.

**Curriculum Admission Guidelines:** The applicant should have completed four units of high school English, one unit of high school laboratory science (preferably biology), two units of social studies, one unit of high school mathematics, and two units of high school typewriting or the equivalent. Developmental courses may be recommended for students with deficiencies in English and mathematics. Priority will be

given to applicants with high class standing. A personal interview with the Counseling Department and Medical Transcriptionist faculty is part of the admission process. Considering the limited available slots, early application is highly advisable. Upon notification of acceptance to the curriculum, applicants are requested to submit a medical report indicating good health. The student will be responsible for transportation to and from agencies for clinical experience. The program is open to both male and female students.

**Curriculum Completion Guidelines:** Students who receive a final grade lower than C in any of the courses in the Medical Transcriptionist sequence must be recommended by the instructor and approved by the Division Chairman to continue in the major.

**Medical Transcriptionist Curriculum**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
STD 100	Orientation	1	0	1
ENG 101	Practical Writing I	3	0	3
HLT 143	Medical Terminology I	3	0	3
BIO 145	Human Anatomy and Physiology for the Health Sciences	4	3	5
OFT <sup>1</sup> 112	Keyboarding/Typewriting II	3	0	3
PSY 120	Human Relations	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	17	3	18
<b>Second Semester</b>				
ENG 102	Practical Writing II	3	0	3
HLT 144	Medical Terminology II	2	0	3
OFT 245	Machine Transcription I	3	0	3
HIT <sup>2</sup> 125	Medical Report Transcription	0	12	3
OFT 216	Word Processing Equipment Operation	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	11	12	15
<b>Second-Year Curriculum</b>				
<b>Third Semester</b>				
HIT 121	Medical Transcription I	0	12-C	4
HIT 196	On-site Training in Medical Transcription	<u>0</u>	<u>9-C</u>	<u>3</u>
	Total .....	0	21-C	7
Total Minimum Credits for Degree .....				40

<sup>1</sup> High school typing or a satisfactory score (minimum of 35 wpm) on a keyboarding skill examination required.

<sup>2</sup> Prerequisite: OFT 112.

**MENTAL HEALTH**

*ASSOCIATE IN  
APPLIED SCIENCE DEGREE*

**Purpose:** Mental health course work prepares students for either entry-level positions in the helping fields or transfer to a bachelor degree program. Through courses and field placements in agencies, students develop skills in working with the mentally, physically, and emotionally handicapped, the aged, the poor, the juvenile delinquent, the substance abuser, and the child or adult in crisis.

Depending on their future educational and occupational needs, students may choose either the clinical track or the optional

transfer track. Students in the **clinical track** participate in a great number of field placements, which enhance the possibility of immediate employment after graduation.

Students in the **transfer track** have a greater number of electives, so that they may fulfill requirements for entrance into a four-year program.

Students must declare their intentions to complete either track by the end of their first year. Faculty will arrange individual consultations with students to help them with career planning.

**Occupational Objectives:** Employment opportunities for graduates in the Mental Health clinical track include staff positions in hospitals, mental health clinics, group homes, training centers, and community service agencies.

Graduates in the Mental Health transfer track may transfer to a four-year college or university for bachelor degrees in fields such

as social work, psychology, special education, gerontology, and human resources.

**Curriculum Admission Guidelines:** Proficiency in high school English and Algebra I for clinical track; Algebra I, Algebra II and Geometry are prerequisites for the transfer track. Developmental courses may be recommended for students with deficiencies in English and mathematics.

**Mental Health Technology Curriculum  
(Clinical Track)**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
ENG 101	Practical Writing I	3	0	3
STD 100	Orientation	1	0	1
MEN 100	Introduction to Mental Health	3	0	3
MEN <sup>1</sup> 101	Mental Health Skill Training I	3	0	3
PSY 220	Introduction to Behavior Modification	3	0	3
MTH 120	Introduction to Mathematics (or MTH 151)	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	16	0	16
<b>Second Semester</b>				
ENG 102	Practical Writing II	3	0	3
MEN <sup>1</sup> 102	Mental Health Skill Training II	3	0	3
PSY 215	Abnormal Psychology	3	0	3
MEN 225	Counseling Therapy	3	0	3
MEN <sup>1</sup> 290	Coordinated Internship	<u>0</u>	<u>15</u>	<u>5</u>
	Total .....	12	15	17
<b>Second-Year Curriculum</b>				
<b>Third Semester</b>				
MEN <sup>1</sup> 221	Group Process I	3	0	3
MEN <sup>1</sup> 290	Coordinated Internship	0	15	5
MEN 245	Problems in Aging	3	0	3
HLT <sup>2</sup> 110	Concepts of Personal and Community Health (or PED elective)	2	0	2
PSY 201	Introduction to Psychology I	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	11	15	16
<b>Fourth Semester</b>				
MEN <sup>1</sup> 222	Group Process II	3	0	3
MEN <sup>1</sup> 290	Coordinated Internship	0	15	5
CIS 150	Introduction to Microcomputer Software	3	0	3
E	Elective	3	0	3
PSY 202	Introduction to Psychology II	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	12	15	17
Total Minimum Credits for Degree .....				66

<sup>1</sup> Departmental approval needed or student must be enrolled in Mental Health Program.

<sup>2</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

**Mental Health Technology Curriculum  
(Transfer Track)**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
ENG 111	College Composition I	3	0	3
MEN 100	Introduction to Mental Health	3	0	3
MEN <sup>1</sup> 101	Mental Health Skill Training I	3	0	3
MTH <sup>4</sup> 151	Mathematics for the Liberal Arts	3	0	3
PSY 220	Introduction to Behavior Modification	3	0	3
STD 100	Orientation	<u>1</u>	<u>0</u>	<u>1</u>
	Total .....	16	0	16
<b>Second Semester</b>				
ENG 112	College Composition II	3	0	3
MEN <sup>1</sup> 102	Mental Health Skill Training II	3	0	3
PSY 215	Abnormal Psychology	3	0	3
MEN <sup>1</sup> 225	Counseling Therapy	3	0	3
MEN <sup>1</sup> 290	Coordinated Internship	<u>0</u>	<u>15</u>	<u>5</u>
	Total .....	12	15	17
<b>Second-Year Curriculum</b>				
<b>Third Semester</b>				
HLT <sup>2</sup> 110	Concepts of Personal and Community Health	2	0	2
MEN <sup>1</sup> 221	Group Process I	3	0	3
MEN 245	Problems in Aging	3	0	3
MEN <sup>1</sup> 290	Coordinated Internship (or Electives) <sup>3</sup>	0	15	5
PSY 201	Introduction to Psychology I (or PED)	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	11	15	16
<b>Fourth Semester</b>				
E	Elective	3	0	3
E	Elective	3	0	3
CIS 150	Introduction to Microcomputer Software	3	0	3
MEN <sup>1</sup> 222	Group Process II	3	0	3
PSY 202	Introduction to Psychology II	3	0	3
SPD 100	Principles of Public Speaking	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	18	0	18
Total Minimum Credits for Degree .....				67

<sup>1</sup> Departmental approval needed or student must be enrolled in Mental Health Program.

<sup>2</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

<sup>3</sup> Two transfer electives from the "Approved List of Transfer Electives" at the beginning of the Programs of Study section may be substituted with the permission of the program head.

<sup>4</sup> "Mathematics for the Liberal Arts" or any higher level mathematics.



**MICROCOMPUTER STUDIES**

*(Career Studies)*  
055

**Occupational Objectives:** The program is designed to provide proficiency in the applications of microcomputers for a variety of business and industry needs for either the first-time user or returning professional.

Graduates will be qualified for jobs requiring skill in microcomputer hardware selection, operating systems, spreadsheets, database manipulation, and programming.

<b>Microcomputer Studies Curriculum</b>					
Course Number		Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>					
<b>First Semester</b>					
CIS 110		Fund. of Computer Info. Systems	3	0	3
CIS 150		Introduction to Microcomputer Software	<u>3</u>	<u>0</u>	<u>3</u>
		Total .....	6	0	6
<b>Second Semester</b>					
CIS 157		Microcomputer Spreadsheet Software	3	2	4
CIS 121		BASIC Programming	<u>3</u>	<u>2</u>	<u>4</u>
		Total .....	6	4	8
<b>Second-Year Curriculum</b>					
<b>Third Semester</b>					
CIS 158		Microcomputer Data Base Management Software	3	2	4
CIS 225		Computer Info. Sys. Development	<u>3</u>	<u>0</u>	<u>3</u>
		Total .....	6	2	7
<b>Fourth Semester</b>					
CIS 176		Computer Prog. "C"	3	2	4
CIS 287		System Devel. Project	<u>2</u>	<u>2</u>	<u>3</u>
		Total .....	5	4	7
Total Minimum Credits for Certificate .....					28

**NURSING**

*ASSOCIATE IN  
APPLIED SCIENCE DEGREE*  
156

**Purpose:** The curriculum is designed to prepare selected students to qualify as contributing members of the health team implementing direct patient care as beginning practitioners in a variety of health service facilities. At the successful completion of the

program, students will be eligible to take the National Council Licensure Exam leading to the designation of registered nurse (R.N).

**Accreditation:** This program is fully accredited by the Virginia Board of Nursing and the National League for Nursing (NLN).

**Occupational Objectives:** Employment opportunities for the Registered Nurse include staff positions in hospitals, nursing homes, health departments, physicians' offices, clinics, day care centers, home health agencies and armed forces.

**Curriculum Admission Guidelines and Procedure For the Class of 1996:**

1. The applicant must hold a high school diploma or GED and have completed the following high school prerequisites with a grade of C or better: one unit of biology, one unit of chemistry, one unit of Algebra I, and one unit of either Algebra II, geometry, or the equivalent. If the applicant is deficient in one or more of these high school prerequisites, a counselor at Virginia Western can recommend appropriate college courses that can be substituted for the high school courses.
2. Applicants to the nursing program are strongly encouraged to meet with a counselor prior to enrollment in any course included in the nursing program or in any course to correct an academic deficiency.
3. The applicant's high school grade point average (GPA) must be at least 2.0. If the applicant has been to college, the applicant's college GPA must also be at least 2.0. High school graduates and GED holders who earned less than a 2.0 GPA during high school will be considered for admission if they have generated a college GPA of 2.0 or above based on 12 semester college credit hours within a twelve month period.
4. Applications for the 1996 class will be accepted beginning May 1, 1995 and must be completed by no later than November 1, 1995. A complete application includes: an application to the college, official transcripts from all high schools and colleges attended, records or transcripts showing completion of a high school diploma or GED, a 1996 Nursing Application Form, and a Nursing Admissions Advising Form. Nursing Application Forms are available in the Admissions Office and the Health Technology Division Office. The Nursing Admissions Advising Form must be completed during a meeting with a counselor. An interview with the Nursing Program Head may also be required if the advising session with a counselor indicates a need for further

interview. After November 1, a Nursing Admissions Committee will review all completed applications. Applicants who are selected to the program will receive a letter of acceptance after December 20.

**Admission Priorities:** When the applications are reviewed in November, priority will be given to applicants with a G.P.A. of 2.5 or higher who have the strongest academic record and who have either already completed all high school prerequisites or who are currently enrolled in any missing prerequisites. When admission must be limited because the number of applicants exceeds available space, priority shall be given to all qualified applicants as follows: (1) residents of the political subdivisions supporting the college, followed by (2) other Virginia residents, (3) residents of other states, finally (4) international students with student or diplomatic visas.

**Nursing Support Courses:** The nursing program is an educationally challenging program. Some students prefer to spread out their workload by completing support courses such as psychology, microbiology, and anatomy and physiology before beginning the nursing program. Although it is permissible to take support courses before starting the program, it should be understood that support courses are not treated as prerequisites for admission to the nursing program and the Nursing Admissions Committee does not give admissions priority to students who have completed support courses.

**Essential Nursing Program Functions:**

To successfully complete the clinical component of the Program, the student must be able to perform all of the essential functions of a clinical nurse:

1. Communicate satisfactorily with clients, physicians, peers, family members and the health care team.
2. See and hear adequately to note slight changes in the client's condition.
3. Hear adequately to perceive and interpret various equipment signals.
4. See adequately to read monitors in order to correctly interpret data on monitor.
5. Stand and/or walk six (6) to eight (8) hours/day.

6. Walk rapidly for a prolonged period from one area to another.
7. Bend or squat frequently.
8. Assist in lifting or moving clients of all age groups and weights.
9. Demonstrate adequate eye/hand coordination for dexterity in manipulation of equipment.
10. Use hands for grasping, pushing, pulling and fine manipulation.
11. Work with arms fully extended overhead for short periods.
12. Manage care of a client in an elevated hospital bed or stretcher, including one-man CPR when necessary.
13. Able to differentiate the color spectrum for color coding of charts and monitoring equipment.
14. Possess the visual acuity to correctly read handwritten orders, medication records, chart contents, and provide safety for clients and visitors.

Despite the foregoing, a qualified person with a disability who can perform these essential functions with reasonable accommodation will be considered for admission along with other qualified applicants.

**Clinical Environment:** The student should realize that student nurses are, by nature of the profession, exposed regularly to highly stressful and demanding situations, combative and difficult clients, and organizational and time pressures in a variety of client care settings.

**Student Responsibilities After Acceptance Into The Program:**

1. Admission is contingent upon a satisfactory medical and dental examination, CPR certification and malpractice insurance. All documentation must be returned to the Nursing Program Head in the Health Technology Division no later than August 15 or the student will be dropped from the program unless there are extenuating circumstances (i.e. late admission). The physical examination must include evidence of Rubella screen, and/or vaccine, PPD skin test (or chest x-ray), serology, CBC, and urinalysis. Synthetic Hepatitis B vaccination series is required.
2. All students admitted to the Nursing Program must attend a two-day nursing

- orientation during the summer semester. The Nursing faculty will conduct Fall Semester advising during this time and students will register for their classes. Tuition payment will be according to College guidelines for Fall Semester.
3. To keep Nursing Program acceptance in good standing, students must maintain a "C" in Natural Science Program requirements (NAS 185, BIO 141 and BIO 142).
  4. NUR 135 (Drug Dosage) is strongly recommended in the summer session preceding admission to increase the potential for success in the program.
  5. Provide transportation to and from agencies utilized for clinical experience.
  6. Purchase uniforms and accessories.
  7. Purchase lab supplies.

**Advanced Placement:**

1. All inquiries for advanced placement must be directed in writing to the Nursing Program Head.
2. LPNs may challenge NUR 111 which includes three (3) components: theory, skills, and dosages and solutions. If the theory and/or skills portions are passed, they must also complete a self-instructional packet during NUR 111 (Fall Semester) covering professional topics. Selected on-campus labs may be required.
3. LPNs may also challenge On-Campus Laboratory skills for NUR 112 and 211.
4. LPNs may be excused from clinical attendance prior to the end of any semester if the faculty determine that all clinical objectives have been met.
5. Students who have withdrawn from other nursing education programs will be considered for admission and advanced placement if they have withdrawn in good academic standing or if they have had extreme extenuating circumstances which have affected their performance. They will be required to submit to the Program Head all official transcripts, a letter of recommendation from their previous program director, as well as previous course materials. The nursing faculty will evaluate their records and make a formal decision regarding acceptance and placement in the Program. Challenge exams may be required.

**Readmission:**

1. Students who meet the readmission criteria set forth in the Nursing Program Handbook may request readmission to the Nursing Program. Requests should be directed in writing to the Program Head of Nursing as soon as the student has made the decision to reapply. Requests should be made prior to February 15 for Fall Semester and July 15 for Spring Semester.
2. Readmission is not automatic. Criteria to be considered when a student applies for readmission are outlined in the Nursing Program Handbook which is provided upon admission to the Program.

**Retention Policies:**

A complete statement of these policies is contained in the **Nursing Program**

**Handbook** which is provided upon admission to the Program.

Successful completion of the program requires the student to maintain a grade of "C" or better in all nursing and natural science courses and a satisfactory evaluation in all clinical components.

**Transfer to Baccalaureate Degree Program:**

1. Graduates of the VWCC Nursing Program may be eligible to apply for admission with advanced placement to Radford University or other colleges offering a baccalaureate degree in nursing.
2. Students who are planning to transfer to a baccalaureate degree program following the A.A.S. degree are advised to take appropriate college transfer courses.

<b>Nursing Curriculum</b>					
<b>Course Number</b>	<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>	
<b>First-Year Curriculum</b>					
<b>First Semester</b>					
NUR <sup>1</sup> 111	Nursing I	7	3-L 6-C	10	
ENG <sup>2</sup> 111	College Composition I (or ENG 101)	3	0	3	
BIO 141	Human Anatomy and Physiology I	3	2	4	
STD 100	Orientation	<u>1</u>	0	<u>1</u>	
	Total .....	14	11	18	
<b>Second Semester</b>					
NUR 112	Nursing II	6	12-C	10	
BIO 142	Human Anatomy and Physiology II	3	2	4	
NAS 185	Microbiology	<u>3</u>	2	<u>4</u>	
	Total .....	12	16	18	
<b>Second-Year Curriculum</b>					
<b>Third Semester</b>					
SPD <sup>2</sup> 100	Public Speaking (or SPD 105 or ENG 105)	3	0	3	
NUR 211	Nursing III	6	12-C	10	
PSY 201	Introduction to Psychology I	3	0	3	
CIS 116	Introduction to Information Systems	1	0	1	
PED <sup>1</sup>	PED	<u>1</u>	0	<u>1</u>	
	Total .....	14	12	18	

**Fourth Semester**

PED <sup>1</sup>	PED	1	0	1
NUR 212	Nursing IV	6	12-C	10
PSY 215	Abnormal Psychology	3	0	3
E <sup>3</sup>	Elective	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	13	12	17
Total Minimum Credits for Degree .....				71

<sup>1</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

<sup>2</sup> ENG 111 & SPD 100 are recommended for students planning to transfer to a baccalaureate degree program. ENG 101 and 102 will not transfer.

<sup>3</sup> ENG 112 is recommended for students planning to transfer to a baccalaureate degree program.

<sup>4</sup> Includes instruction in fundamental mathematical skills.

**NURSE AIDE**

(Career Studies)  
012

**Purpose:** The curriculum is designed to prepare selected students in basic nursing care of the patient in the extended-care or acute-care facility as well as the home setting. Upon successful completion of the program, the student will be eligible to take the Nurse Aide Competency Examination leading to the designation Certified Nurse Aide (CNA).

**Occupational Objectives:** Nurse aides holding certification may be employed in nursing homes, hospitals, and other medical health facilities. CNA's may be placed on registers to provide home health care for both acute and chronic patients who opt to remain at home.

**Program Schedule:** Two programs are offered each year, one in the fall semester and one in the spring semester. Each

program consists of a sixteen week course of study.

**Accreditation:** This program is fully accredited by the Virginia State Board of Nursing.

**Curriculum Admission Guidelines:**

Interested students are requested to contact the Health Technology Division Office to place their names on the Nurse Aide Program Registry. Students are contacted for a personal interview with a nurse aide faculty member prior to acceptance into the upcoming class. A high school diploma, GED, or the equivalent is recommended. A standardized reading test may be required of applicants whose records indicate academic weakness. Applicants who score at a low reading level on the test will be recommended to enroll in ENG 04 Reading Improvement.

**Nursing Aide Curriculum**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First Session (Weeks 1-6)</b>				
NUR 25	Nursing Assistant	2	3	3
NUR 95	Topics in Nursing	<u>1</u>	<u>0</u>	<u>1</u>
	Total .....	3	3	4

<b>Second Session (Weeks 7-11)</b>				
NUR 37	Hospital and Home Health Care	<u>2</u>	<u>4</u>	<u>4</u>
	Total .....	2	4	4
<b>Third Session (Weeks 12-16)</b>				
NUR 27	Geriatric Nurse Aide	<u>2</u>	<u>5</u>	<u>4</u>
	Total .....	2	5	4
Total Minimum Credits for Degree .....				12

**OCCUPATIONAL SAFETY**

*(Career Studies)*

011

**Occupational Objective:** The program is designed to provide knowledge and a theoretical basis required to fulfill occupational safety professional needs.

<b>Occupational Safety</b>				
Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
FIR 117	Industrial Fire Protection	3	0	3
HLT 100	First Aid and CPR	3	0	3
SAF 120	Safety & Health Standard: Regulations and Codes	3	0	3
SAF 126	Principles of Industrial Safety	3	0	3
SAF 131	Materials Handling, Machinery, Handtools and Control I	3	0	3
SAF 140	Introduction to Industrial Hygiene	3	0	3
SAF 215	Industrial Sound and Noise	2	2	3
FIR 111	Hazardous Materials	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	23	2	24
Total Minimum Credits for Certificate .....				24

**OFFICE SYSTEMS TECHNOLOGY**  
**(Administrative Assistant, Legal, Medical)**

*ASSOCIATE IN  
 APPLIED SCIENCE DEGREE  
 294*

**Purpose:** The curriculum is designed to prepare persons for full-time employment upon completion of the community college program. Individuals who are seeking initial employment in an office position and those who are seeking promotion may benefit from this curriculum.

**Occupational Objectives:** Executive secretary, administrative assistant, legal secretary, medical secretary, stenographer, word processor, or related office occupations.

**Curriculum Admissions Guidelines:** school English. Developmental courses may be recommended for students with deficiencies in English or mathematics.

Minimum of two units of high school mathematics, one of which must be algebra or the equivalent, and proficiency in high

**OFFICE SYSTEMS TECHNOLOGY CURRICULUM  
(Administrative Assistant)**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
PSY 120	Human Relations	3	0	3
ENG 111	College Composition I	3	0	3
MTH 120	Introduction to Mathematics (or MTH 163)	3	0	3
OFT <sup>3</sup> 112	Keyboarding/Typewriting II	3	0	3
OFT 121	Shorthand I	4	0	4
STD 100	Orientation	<u>1</u>	<u>0</u>	<u>1</u>
	Total .....	17	0	17
<b>Second Semester</b>				
BUS 150	Principles of Management	3	0	3
ECO 202	Principles of Economics II	3	0	3
OFT 122	Shorthand II	4	0	4
OFT 216	Word Processing Equipment Operation	3	0	3
SPD 105	Oral Communication	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	16	0	16
<b>Second-Year Curriculum</b>				
<b>Third Semester</b>				
BUS 241	Business Law I	3	0	3
HLT <sup>1</sup> 110	Concepts of Personal & Community Health (or PED)	2	0	2
OFT 205	Business Communications	3	0	3
OFT 236	Word Processing Operation and System Operation	4	0	4
OFT 241	Machine Transcription I	3	0	3
OFT 251	Office Systems and Procedures	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	18	0	18
<b>Fourth Semester</b>				
ACC 211	Principles of Accounting I	3	0	3
ACC 213	Principles of Accounting Lab I	0	2	1
OFT 215	Executive Keyboarding/Typewriting	3	0	3
OFT 235	Specialized Software Applications	3	0	3
OFT 252	Office Systems and Procedures	3	0	3
E <sup>2</sup>	Elective	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	15	2	16
Total Minimum Credits for Degree .....				67

<sup>1</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

<sup>2</sup> Elective may be any 100 or above level course.

<sup>3</sup> Prerequisite H. S. Typing Certification or Credit By Exam

**OFFICE SYSTEMS TECHNOLOGY CURRICULUM  
(Legal Secretary)**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
PSY 120	Human Relations	3	0	3
ENG 111	College Composition I	3	0	3
MTH 120	Introduction to Mathematics (or MTH 163)	3	0	3
OFT <sup>3</sup> 112	Keyboarding/Typewriting II	3	0	3
OFT 121	Shorthand I	4	0	4
STD 100	Orientation	<u>1</u>	<u>0</u>	<u>1</u>
	Total .....	<u>17</u>	0	17
<b>Second Semester</b>				
BUS 150	Principles of Management	3	0	3
LGL 110	Intro. to Law and the Legal Assistant	3	0	3
OFT 122	Shorthand II	4	0	4
OFT 216	Word Processing Equipment Operation	3	0	3
SPD 105	Oral Communication	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	16	0	16
<b>Second-Year Curriculum</b>				
<b>Third Semester</b>				
BUS 241	Business Law I	3	0	3
HLT <sup>1</sup> 110	Concepts of Personal & Community Health (or PED)	2	0	2
OFT 205	Business Communications	3	0	3
OFT 236	Word Processing Operation and System Operation	4	0	4
OFT 246	Legal Machine Transcription I	3	0	3
OFT 261	Legal Office Systems and Procedures	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	18	0	18
<b>Fourth Semester</b>				
ACC 211	Principles of Accounting I	3	0	3
ACC 213	Principles of Accounting Lab I	0	2	1
ECO 202	Principles of Economics II	3	0	3
OFT 215	Executive Keyboarding/Typewriting	3	0	3
OFT 262	Office Systems and Procedures (Legal)	3	0	3
E <sup>2</sup>	Elective	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	15	2	16
Total Minimum Credits for Degree .....				67

<sup>1</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

<sup>2</sup> Elective may be any 100 or above level course.

<sup>3</sup> Prerequisite H. S. Typing Certification or Credit by Exam



**OFFICE SYSTEMS TECHNOLOGY CURRICULUM  
(Medical Secretary)**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
PSY 120	Human Relations	3	0	3
ENG 111	College Composition I	3	0	3
MTH 120	Introduction to Mathematics (or MTH 163)	3	0	3
OFT <sup>3</sup> 112	Keyboarding/Typewriting II	3	0	3
OFT 121	Shorthand I	4	0	4
STD 100	Orientation	<u>1</u>	<u>0</u>	<u>1</u>
	Total .....	17	0	17
<b>Second Semester</b>				
BUS 150	Principles of Management	3	0	3
HLT 143	Medical Terminology I	3	0	3
OFT 122	Shorthand II	4	0	4
OFT 216	Word Processing Equipment Operation	3	0	3
SPD 105	Oral Communication	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	16	0	16
<b>Second-Year Curriculum</b>				
<b>Third Semester</b>				
BUS 241	Business Law I	3	0	3
HLT <sup>1</sup> 110	Concepts of Personal & Community Health (or PED)	2	0	2
OFT 205	Business Communications	3	0	3
OFT 236	Word Processing Operation and System Operation	4	0	4
OFT 245	Medical Machine Transcription	3	0	3
OFT 271	Office Systems and Procedures (Medical)	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	18	0	18
<b>Fourth Semester</b>				
ACC 211	Principles of Accounting I	3	0	3
ACC 213	Principles of Accounting Lab I	0	2	1
ECO 202	Principles of Economics II	3	0	3
E <sup>2</sup>	Elective	3	0	3
OFT 215	Executive Typing	3	0	3
OFT 272	Office Systems and Procedures (Medical)	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	15	2	16
Total Minimum Credits for Degree .....				67

<sup>1</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

<sup>2</sup> Elective may be any 100 or above level course.

<sup>3</sup> Prerequisite H. S. Typing Certification or Credit By Exam

**RADIO AND TELEVISION PRODUCTION**

*ASSOCIATE IN  
APPLIED SCIENCE DEGREE  
965*

**Purpose:** With the growth of commercial, educational, and industrial broadcasting in Virginia, the need for personnel trained in radio and television production is expanding. This curriculum is designed primarily for persons seeking immediate employment upon graduation as television studio/remote crew personnel, radio announcer and production persons, and copywriters. Related curriculum course work in broadcast history, management, advertising, contemporary social issues, and technical problems broadens the scope of student understanding of broadcast facility operation, preparing the student for career advancement once entering the work force and giving the student career options in such areas as programming, promotions, and traffic. Upon graduation the student may also transfer curriculum credits to a four-year university to

attain a B.A. degree in communications, public relations, advertising, or broadcast journalism.

**Occupational Objectives:** Radio/TV producer/director; videographer; videotape editor; audio director; disc jockey; advertising agency assistant; script and continuity writer.

**Curriculum Admission Guidelines:** Proficiency in high school English and mathematics (1 unit of Algebra). Proficiency in keyboarding skills is also required (high school or college keyboarding). It is recommended that applicants have a personal interview with the broadcasting faculty to discuss their education goals and occupational objectives. Developmental courses may be required for students with deficiencies in English and mathematics.

**Radio and Television Production Curriculum**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
BCS 101	Introduction to Radio/TV Production I	3	3	4
BCS <sup>1</sup> 111	Speech for Radio/TV I	2	3	3
BCS 125	Television Design	3	0	3
ENG 111	College Composition I	3	0	3
MTH <sup>2</sup> 120	Introduction to Mathematics (or MTH 151)	3	0	3
STD 100	Orientation	<u>1</u>	<u>0</u>	<u>1</u>
	Total .....	15	6	17
<b>Second Semester</b>				
BCS 100	Broadcasting in America	3	0	3
BCS 102	Introduction to Radio/TV Production II	3	3	4
BCS 112	Speech for Radio/TV II	2	3	3
BCS 227	Technical Problems of Radio/TV	3	0	3
ENG 112	College Composition II	3	0	3
HLT/PED <sup>3</sup>	Health or Physical Education Elective	<u>1-2</u>	<u>0</u>	<u>1-2</u>
	Total .....	15-16	6	17-18

**Second-Year Curriculum  
Third Semester**

BCS 201	Advanced Radio/TV Production I	3	6	5
BCS 235	Radio/TV Station Management and Operation	3	0	3
BCS 245	Writing for Radio/TV	3	0	3
E	Elective	3	0	3
E <sup>4</sup>	Social Science Elective	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	15	6	17

**Fourth Semester**

BCS 202	Advanced Radio/TV Production II	3	6	5
BCS 247	Broadcast Advertising and Sales	3	0	3
BCS 255	Social Issues in American Broadcasting	3	0	3
BCS 290	Coordinated Internship (or BCS 298/299)	0	10	2
HLT/PED <sup>3</sup>	Health or Physical Education Elective	1-2	0	1-2
E <sup>4</sup>	Social Science Elective	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	13-14	16	17-18

Total Minimum Credits for Degree ..... 68

<sup>1</sup> This course develops oral communication competencies required in the college's general education goals.

<sup>2</sup> Students who plan to transfer to a four-year institution should take MTH 151 or higher.

<sup>3</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

<sup>4</sup> A two-semester sequence is recommended for students planning to transfer to a baccalaureate degree program.

**RADIOGRAPHY**

ASSOCIATE IN  
APPLIED SCIENCE DEGREE  
172

**Purpose:** The curriculum is designed to prepare selected students to qualify as contributing members of the allied health team who care for patients under the supervision of qualified physicians. Upon completion of the curriculum, which includes a semester internship, the student is eligible to apply to write the National Registry Examination leading to certification as a Registered Radiographer. Successful completion of the program and certifying exam will qualify a graduate to gain employment as a radiographer.

**Accreditation Status:** The curriculum has been approved by the authority of the Joint Review Committee on Education in Radiologic Technology, Council on Medical Education of the AMA, representing the ACR and the ASRT.

**Occupational Objectives:** Positions are available in hospitals, education, industry, clinics, government agencies, radiologists offices, and emergency care centers.

**Curriculum Admission Guidelines:**

1. High school diploma or equivalent
2. Completion of two units of high school or college laboratory science from the following: biology, chemistry, physics with a "C" or better in each
3. Completion of three units of high school or college mathematics - Algebra I, II and Geometry or equivalent with a grade of "C" or better in each
4. Current high school or college grade point average 2.0 or above

**Essential Program Functions - To successfully complete the clinical**

component of the Program, the student must be able to perform certain tasks requiring specific physical abilities. The candidate must be able to perform all of the following essential functions of a clinical radiographer:

1. Communicate satisfactorily with the patients, physicians, peers, and ancillary staff
2. See and hear adequately to note slight changes in patient condition
3. Hear adequately to perceive and interpret various equipment signals
4. See adequately to read emergency monitor data
5. Work with arms fully extended overhead
6. Lift and move 50 pounds at waist level or below waist level
7. Stand in place for extended periods of time (30 minutes to 3 hours)
8. Walk rapidly for a prolonged period from one area to another (20-100 feet) carrying up to 25 pounds

Despite the foregoing, a qualified person with a disability who can perform these essential functions with reasonable accommodation will be considered for admission along with other qualified applicants.

**Clinical Environment** - The candidate should realize that student radiographers are, by nature of the profession, exposed regularly to: ionizing radiation, infectious diseases, combative and difficult patients, and adverse conditions in the morgue.

**Admission Priorities:** When admission must be limited because the number of applicants exceeds available space, priority shall be given to all qualified applicants as follows: (1) residents of the political subdivisions supporting the college, followed by (2) other Virginia residents, (3) residents of other states, finally (4) international students with student or diplomatic visas.

**Admission Procedure:** Upon completing an application to the college and a 1996 Radiography Application, students seeking admission to the Radiography program must have transcripts from all schools and colleges attended forwarded to the College. Applicants must see a college counselor for information, evaluation, and advising

regarding the program. If the student meets all requirements for the Radiography program, the counselor will complete a Radiography Admissions Advising Form.

Upon receipt of the student's completed file by the Program Head, the applicant will be contacted for an appointment. Appointments will begin November 1. Early application is encouraged. Applicants whose credentials are completed by February 15 will be considered for early admission. After February 15, students will be considered on a space available basis. Each applicant's file will be considered by the Radiography Admissions Committee. Applicants will be notified in writing of the action taken by the committee.

**Advanced Placement:** Advanced placement is available for radiographers who wish to pursue an associate degree and for transfer students from other radiography programs. All inquiries for advanced placement must be directed to the radiography program head and will be considered on an individual basis.

**Readmission:** Students who have withdrawn for any reason from the Radiography Program are required to petition the program head no later than May 15 to be considered for readmission.

**Student Responsibilities:** All students admitted to the Radiography Program must attend radiography orientation, register for all classes, and pay tuition prior to August 1. Final admission is contingent upon a satisfactory medical examination. Results must be returned to the radiography program head in the Health Technology division 30 days before fall classes begin. This health history must include evidence of rubella (German measles) screening and/or vaccine, tuberculin skin test (or chest x-ray), and Hepatitis B vaccination.

The student is responsible for transportation to and from agencies utilized for clinical experience and the purchase of student uniforms and accessories. Malpractice insurance coverage is required.

Verification of current CPR certification will be required prior to the beginning of radiography classes and must be kept current.

Successful completion of the program requires the student to maintain a "C" or better in all radiography and clinical courses. A complete statement of all the above

policies is outlined in the Radiography Handbook which is available in the Office of the Division of Health Technology.

<b>Radiography Curriculum</b>				
Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
HLT 143	Medical Terminology I	3	0	3
RAD 121	Radiographic Procedures I	3	3	4
BIO 145	Human Anatomy and Physiology for the Health Sciences	4	3	5
STD 100	Orientation	1	0	1
RAD 131	Elementary Clinical Procedures I	0	15-C	3
HLT/PED <sup>1</sup>	Health or Physical Education Elective	1-2	<u>0</u>	<u>1-2</u>
Total .....		12-13	21	17-18
<b>Second Semester</b>				
RAD 106	Introduction to Radiologic Science	2	0	2
RAD 132	Elementary Clinical Procedures II	0	15-C	3
RAD 221	Radiographic Procedures II	3	3	4
RAD 225	Specialized Patient Care Procedures	2	0	2
MTH 126	Mathematics for Allied Health	2	0	2
E <sup>2</sup>	Social Science Elective	<u>3</u>	<u>0</u>	<u>3</u>
Total .....		12	18	16
<b>Summer Semester I</b>				
RAD 205	Radiation Protection & Radiobiology	3	0	3
RAD 298	Seminar and Project	1	0	1
RAD 190	Coordinated Practice	0	16-C	4
E	Elective	<u>3</u>	<u>0</u>	<u>3</u>
Total .....		7	16	11
<b>Second-Year Curriculum</b>				
<b>Fourth Semester</b>				
RAD 111	Radiologic Science I	3	3	4
RAD 231	Advanced Clinical Procedures I	0	25-C	5
RAD 240	Radiographic Pathology	3	3	3
ENG <sup>3</sup> 101	Practical Writing I (or ENG 111)	3	0	3
E <sup>2</sup>	Social Science Elective	<u>3</u>	<u>0</u>	<u>3</u>
Total .....		12	31	18
<b>Fifth Semester</b>				
RAD 112	Radiologic Science II	3	3	4
RAD 232	Advanced Clinical Procedures II	0	25-C	5
RAD 295	Topics in Radiography	1	0	1
CIS 116	Computers and Information Systems	1	0	1
ENG <sup>3</sup> 102	Practical Writing II (or ENG 112)	3	0	3
HLT/PED <sup>1</sup>	Health or Physical Education Elective	1-2	<u>0</u>	<u>1-2</u>
Total .....		9-10	28	15-16

**Summer Semester II**

RAD 290	Coordinated Internship	0	21-C	7
RAD 215	Correlated Radiographic Theory	<u>2</u>	<u>0</u>	<u>2</u>
	Total .....	2	21	9
Total Minimum Credits for Degree .....				86

<sup>1</sup> Two credits of Health (HLT) or Physical Education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

<sup>2</sup> A two-semester sequence is recommended.

<sup>3</sup> ENG 111-112 (College Composition, I-II) with SPD 100 is recommended for students planning to transfer to a baccalaureate degree program.

**RAILROAD OPERATIONS**

*ASSOCIATE IN  
APPLIED SCIENCE DEGREE*

**Pending approval - program may become available during 1995-96 academic year.**

**Purpose:** This degree program is designed primarily for students who desire to pursue business or technical careers in the modern railroad industry. The curriculum general education core has been planned to develop and enhance crucial intellectual skills such as critical thinking, writing, speaking and mathematical reasoning. These skills are universally needed in modern business and industrial settings. The general education classes have been chosen to maximize university transfer options for the student. The student will gain an understanding of the history, structure, regulations, operating practices and employment opportunities of the railroad industry through a sequence of four classes. Business and technical electives will enable the student to acquire specific vocational competencies. These elective courses should be carefully chosen with the help of a curriculum advisor to

assure that they are suitable to the student's background and career goals. The curriculum will prepare the graduate to understand better and adapt more readily to the challenge of working in organizations undergoing continuous technological change.

**Career Objectives:** Transportation — Dispatcher, Crew Caller, Clerk, Conductor, etc.; Engineering Services — Signaller, Electronic Technician, Work Equipment Repairman, Towerman, etc.; Mechanical (Motive Power) — Clerk, Electrician, Machinist/Mechanic, etc.

**Curriculum Admission Guidelines:** 4 units of English; 3 units of mathematics (algebra I, II and geometry); 1 unit of laboratory science; and one unit of social science. Developmental courses may be recommended for students with deficiencies in English, reading, and/or mathematics.

<b>Railroad Operations</b>				
<b>Course Number</b>	<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
ENG 111	College Composition I	3	0	3
E <sup>1</sup>	Business/Technical Elective	3	3	4
MTH 166	Pre-Calculus with Trigonometry	5	0	5
RRO	History of Railroading	3	0	3
HLT/PED	Health or Physical Education	1	0	1
STD 100	Orientation	<u>1</u>	<u>0</u>	<u>1</u>
	Total .....	16	3	17
<b>Second Semester</b>				
CIS 150	Introduction to Microcomputer Software	3	0	3
E <sup>1</sup>	Business/Technical Elective	3	3	4
MTH 157	Elementary Statistics	3	0	3
RRO	Railroad Technical Careers	3	0	3
HLT/PED	Health or Physical Education	1	0	1
SPD 100	Principles of Public Speaking	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	16	3	17
<b>Third Semester</b>				
BUS 100	Introduction to Business	3	0	3
ECO 201	Principles of Economics I — Macroeconomics	3	0	3
E <sup>1</sup>	Business/Technical Elective	3	0-3	3-4
PHY 201	General College Physics I	3	3	4
RRO	Railroad Operations	<u>3</u>	0	3
	Total .....	15	3-6	16-17
<b>Fourth Semester</b>				
ECO2 202	Principles of Economics II	3	0	3
PHI 101	Introduction to Philosophy I	3	0	3
E <sup>3</sup>	Elective	3	0	3
E <sup>1</sup>	Business/Technical Elective	3	0-3	3-4
RRO	Railroad Safety, Quality and Environment	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	15	0-3	15-16
Total Minimum Credits for Degree .....				65

<sup>1</sup> Student must consult with curriculum advisor to select business and technical electives.

<sup>2</sup> A social science elective may be substituted for ECO 202.

<sup>3</sup> Elective should be chosen from discipline outside of student's business or technical field.

**REAL ESTATE**

(Career Studies)  
070

**Occupational Objectives:** To prepare students to be licensed real estate brokers and salespersons upon successful completion of the Virginia Real Estate Commission examination.

<b>Real Estate Curriculum</b>					
<b>Course Number</b>	<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>	
<b>First Semester</b>					
REA 100	Principles of Real Estate	4	0	4	
REA 105	Real Estate Mathematics	<u>3</u>	<u>0</u>	<u>3</u>	
	Total .....	7	0	7	
<b>Second Semester</b>					
REA 215	Real Estate Brokerage	3	0	3	
REA 216	Real Estate Appraisal	<u>3</u>	<u>0</u>	<u>3</u>	
	Total .....	6	0	6	
<b>Third Semester</b>					
REA 217	Real Estate Finance	3	0	3	
REA 245	Real Estate Law (or BUS 241)	3	0	3	
E <sup>1</sup>	Real Estate Elective	<u>3</u>	<u>0</u>	<u>3</u>	
	Total .....	9	0	9	
Total Hours Required for Career Studies Certificate .....				22	

<sup>1</sup> Elective should be chosen from the following options: REA 226, REA 246, REA 247, or REA 256.



**SCIENCE**

*ASSOCIATE IN SCIENCE DEGREE*  
880

**Purpose:** The A.S. degree in Science contains three curricular options: Science, Science with a Specialization in Computer Science, and Science with a Specialization in Health Sciences. The options are designed for persons who plan to transfer to a four-year college or university to complete a baccalaureate degree program in a pre-professional or scientific program. Students preparing for a major in agriculture, biology, chemistry, pre-dentistry, forestry, geology, home economics, horticulture, pharmacy, pre-medicine, physics, science education, or pre-veterinary should complete the curricular program for Science. Students preparing for a major in computer science or mathematics should complete the Specialization in Computer Science, and students preparing for a major in a health field such as medical technology, nursing, or physical therapy should complete the Specialization in Health Sciences.

None of the curricular options are inflexible. Provided minimum state curriculum standards are satisfied, some of the graduation requirements can be adjusted when changes are needed to comply with

the curriculum requirements at the transfer institution. For example, with departmental approval, pharmacy students are allowed to take less mathematics credits and more science credits than those shown in the Science curriculum guide sheet. Students are urged to acquaint themselves with the requirements of the major department in the college or university to which transfer is contemplated and also to consult with their faculty advisor in planning their program and selecting electives. In order to prepare for junior class standing at a four-year college or university, the student usually must complete a program at the community college that is comparable in length and course content to the first two years of the program at the four-year college or university.

**Curriculum Admission Guidelines:** 4 units of English; 3 units of college preparatory mathematics for science degree (4 units for Computer Science specialization); 1 unit of laboratory science; and 1 unit of social science. Developmental courses may be recommended for students with deficiencies in English and mathematics.

Science Curriculum					
Course Number		Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>					
<b>First Semester</b>					
CIS 150		Introduction to Microcomputer Software (or CSC 201)	3	0	3-4
ENG 111		College Composition I	3	0	3
MTH 163		Pre-Calculus I (or MTH 175-177)	3-5	0	3-5
HLT <sup>1</sup> 110		Concepts of Personal or Community Health (or PED elective)	2	0	2
E <sup>2</sup>		Science Elective with Laboratory	3	3	4
STD 100		Orientation	1	0	1
		Total .....	15-17	3	16-19

**Second Semester**

E <sup>3</sup>		Humanities Elective	3	0	3
ENG 112		College Composition II	3	0	3
MTH 271		Applied Calculus I (or MTH 176-178)	3-5	0	3-5
E <sup>2</sup>		Science Elective with Laboratory	3	3	4
E <sup>4</sup>		Transfer Elective	3	<u>0</u>	3
		Total .....	15-17	3	16-18

**Second-Year Curriculum**

**Third Semester**

HIS 121		United States History (or HIS 101)	3	0	3
MTH <sup>5</sup> 272		Applied Calculus II (or MTH 241)	3	0	3
E <sup>2</sup>		Science Elective with Laboratory	3	3	4
E <sup>6</sup>		Social Science Elective	3	0	3
E <sup>4</sup>		Transfer Elective	2-3	0	2-3
E <sup>4</sup>		Transfer Elective	<u>2-3</u>	<u>0</u>	<u>2-3</u>
		Total .....	16-18	3	17-19

**Fourth Semester**

E <sup>4</sup>		Transfer Elective	3-4	0-3	3-4
E <sup>2</sup>		Science Elective with Laboratory	2-3	2-3	3-4
E <sup>2</sup>		Science Elective with Laboratory	3	3	4
E <sup>6</sup>		Social Science Elective	3	0	3
SPD 100		Principles of Public Speaking	3	0	3
		Total .....	14-16	5-9	16-18

Total Minimum Credits for Degree ..... 65

- <sup>1</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.
- <sup>2</sup> Natural science courses must be selected from the biology, chemistry, geology, and physics courses listed on the "Approved List of Transfer Electives" at the beginning of the Programs of Study section.
- <sup>3</sup> Humanities elective must be chosen from the "Approved List of Transfer Electives" at the beginning of the Programs of Study section.
- <sup>4</sup> Electives must be chosen from the "Approved List of Transfer Electives" at the beginning of the Programs of Study section.
- <sup>5</sup> Students who complete MTH 175-176 and 177-178 may substitute MTH 277 or an elective.
- <sup>6</sup> A two-semester sequence of social science must be selected from the "Approved List of Transfer Electives" at the beginning of the Programs of Study section.

**Science Curriculum:  
Specialization in Computer Science**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
CSC 201	Computer Science I	4	0	4
ENG 111	College Composition I	3	0	3
HLT <sup>1</sup>	Health or Physical Education	1-2	0	1-2
MTH 175	Calculus of One Variable I	3	0	3
MTH 177	Introductory Linear Algebra	2	0	2
STD 100	Orientation	1	0	1
E <sup>2</sup>	Social Science Elective	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	17-18	0	17-18

**Second Semester**

CSC 202	Computer Science II	4	0	4
ENG 112	College Composition II	3	0	3
HLT <sup>1</sup>	Health or Physical Education	1-2	0	1-2
MTH 176	Calculus of One Variable II	3	0	3
MTH 178	Topics in Analytic Geometry	2	0	2
E <sup>2</sup>	Social Science Elective	<u>3</u>	<u>0</u>	<u>3</u>
Total .....		16-17	0	16-17

**Second-Year Curriculum**

**Third Semester**

HIS 101	History of Western Civilization (or HIS 121)	3	0	3
MTH 241	Statistics I	3	0	3
MTH 277	Vector Calculus	4	0	4
PHY 241	University Physics I (or CHM 111)	3	3	4
E <sup>3</sup>	Elective	<u>2-3</u>	<u>0</u>	<u>2-3</u>
Total .....		15-16	3	16-17

**Fourth Semester**

E <sup>4</sup>	Humanities Elective	3	0	3
PHY 242	University Physics II (or CHM 112)	3	3	4
E <sup>3</sup>	Elective	3	0	3
E <sup>3</sup>	Elective	3	0	3
SPD 100	Principles of Public Speaking	<u>3</u>	<u>0</u>	<u>3</u>
Total .....		15	3	16

Total Minimum Credits for Degree ..... 65

<sup>1</sup> Two credits of health (HLT) or physical education (PED) are required of all students. Veterans will be awarded HLT/PED credit based on military service.

<sup>2</sup> A two-semester sequence of social science must be chosen from the "Approved List of Transfer Electives" at the beginning of the Programs of Study section.

<sup>3</sup> Electives must be chosen from the "Approved List of Transfer Electives" at the beginning of the Programs of Study section.

<sup>4</sup> A humanities elective must be chosen from the "Approved List of Transfer Electives" at the beginning of the Programs of Study section.

**Science Curriculum:  
Specialization in Health Sciences**

**Purpose:** The Health Sciences Specialization is designed for students who plan to transfer to a four-year college or university and major in a health field. Curricular needs aren't the same in every health field, so students should confer with their faculty advisor or counselor and check with the four-year institution that they plan on attending in order to identify specific requirements for the field that they are interested in pursuing.

As the result of a cooperative arrangement with Radford University, a special curricular option has been designed for students who

want to transfer into Radford University's baccalaureate degree program in nursing. Provided all courses are completed with a grade of "C" or above with a cumulative grade point average of 3.2 or higher, Radford University has agreed that VWCC graduates will be accepted into Radford University's upper division nursing degree program. If the cumulative grade point average at VWCC is less than 3.2 and greater than or equal to 2.5, admission into the upper division nursing degree program at Radford will be on a competitive basis and will be dependent upon the space

available. The upper division courses can be completed at the Roanoke site, located in the Education Center, Roanoke Memorial Hospitals, so it is possible to complete all of the baccalaureate degree nursing requirements without leaving the Roanoke Valley. Students who are preparing to attend a nursing program at another college besides Radford University should check that college's degree requirements to

determine if substitutions in VWCC's course requirements need to be requested.

**Curriculum Admissions Requirements:** Four units of English; one unit of high school or college biology; one unit of social science; and three units of college preparatory mathematics (Algebra I, Geometry, and Algebra II). Developmental courses may be recommended for students with deficiencies in English and mathematics.

**Science Degree  
Health Sciences Curriculum**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
CHM 101	General Chemistry I (or CHM 111)	3	3	4
ENG 111	College Composition I	3	0	3
HIS 121	U.S. History (or HIS 101)	3	0	3
MTH 151	Liberal Arts Mathematics I	3	0	3
PSY 201	Introduction to Psychology	3	0	3
STD 100	Orientation	<u>1</u>	<u>0</u>	<u>1</u>
	Total .....	16	3	17
<b>Second Semester</b>				
CHM 102	General Chemistry II (or CHM 112)	3	3	4
CIS 199	Microcomputer Seminar	1	0	1
ENG 112	College Composition II	3	0	3
HLT 230	Principles of Nutrition and Human Development	3	0	3
MTH 152	Liberal Arts Mathematics II (or MTH 157)	3	0	3
PSY 215	Abnormal Psychology	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	16	3	17
<b>Second-Year Curriculum</b>				
<b>Third Semester</b>				
BIO 141	Human Anatomy and Physiology I	3	2	4
ENG 241	American Literature (or ENG 243)	3	0	3
PHI 101	Introduction to Philosophy (or REL 200, 210, or 231)	3	0	3
PLS 211	U.S. Government (or ECO 201)	3	0	3
E <sup>1</sup>	General Elective	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	15	2	16
<b>Fourth Semester</b>				
BIO 142	Human Anatomy and Physiology II	3	2	4
NAS 185	Microbiology	3	2	4
PSY 235	Child Psychology (or PSY 231)	3	0	3
SOC 201	Introduction to Sociology	3	0	3
SPD 100	Principles of Public Speaking	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	15	4	17
Total Minimum Credits for Degree .....				67

<sup>1</sup> Electives must be selected from the "Approved List of Transfer Electives" at the beginning of the Programs of Study section. Students transferring to Radford University are advised to take a fine arts course (MUS 121 or ART 101).

**SIGN LANGUAGE**

*(Career Studies)*  
062

**Purpose:** The purpose is to train members of the community to communicate proficiently in American Sign Language as well as to enable them to develop an understanding of Deaf Culture. The focus is on American Sign Language vocabulary, syntax, non-manual aspects, expressive and receptive signing skills and Deaf Culture.

**Occupational Objective:** The program is designed to provide proficiency and understanding of the deaf community. Graduates will be qualified for jobs in education, community and volunteer organizations that deal with the deaf or hard of hearing. Graduates are also prepared to transfer to AAS programs designed for interpreters.

<b>Sign Language Curriculum</b>				
<b>Course Number</b>	<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
<b>Two-Year Curriculum</b>				
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
PSY 201	Introduction to Psychology	3	0	3
SCM 100	Introduction to American Sign Language	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	6	0	6
<b>Second Semester</b>				
SCM 105	Orientation to Deafness	3	0	3
SCM 110	Intermediate American Sign Language	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	6	0	6
<b>Second-Year Curriculum</b>				
<b>Third Semester</b>				
SCM 115	Expressive/Receptive Fingerspelling	2	0	2
SCM 200	Advanced American Sign Language	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	5	0	5
<b>Fourth Semester</b>				
SCM 211	Expressive Interpreting I	2	2	3
SCM 230	Introduction to Interpreting	3	0	3
HLT 110	Concepts of Personal & Community Health	<u>3</u>	<u>2</u>	6
	Total .....	8	2	12
Total Minimum Credits for Certificate .....				25

**WELDING**

(Certificate)  
995

**Purpose:** There is a continuous need for properly trained welders to work in the manufacturing, construction, and maintenance/repair occupations. This program is designed to prepare the student for full-time employment in the welding field. In this curriculum, there are separate courses to introduce the student to the concepts, practices, and techniques of many types of welding. Also included are courses in welding metallurgy, blueprint reading, basic electricity, and industrial safety. In addition to the aforementioned courses, the student and faculty advisor will select technical electives to complement the

technical program of study. Two general education courses are also required in this curriculum.

**Occupational Objectives:** Arc, gas, mig, and tig welder; welding supervisor; welding inspector; or sales and service industry representative.

**Curriculum Admission Guidelines:** Proficiency in oral and written communication skills and general mathematics. Students with deficiencies will require developmental studies. The purchase of personal safety clothing is the financial responsibility of the individual student.

<b>Welding Curriculum</b>				
<b>Course Number</b>	<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
<b>First-Year Curriculum</b>				
<b>First Semester</b>				
DRF 161	Blueprint Reading I	1	3	2
STD 100	Orientation	1	0	1
WEL 120	Fundamentals of Welding	<u>1</u>	<u>3</u>	<u>2</u>
	Total .....	3	6	5
<b>Second Semester</b>				
SAF 127	Industrial Safety	2	0	2
WEL 121	Arc Welding	<u>1</u>	<u>3</u>	<u>2</u>
	Total .....	3	3	4
<b>Second-Year Curriculum</b>				
<b>Third Semester</b>				
ELE 133	Practical Electricity I	2	2	3
WEL 135	Inert Gas Welding	<u>1</u>	<u>3</u>	<u>2</u>
	Total .....	3	5	5
<b>Fourth Semester</b>				
WEL 145	Welding Metallurgy	3	0	3
E'	Elective	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	6	0	6

**Additional required courses that may be taken any semester:**

ENG/SPD	English Elective	3	0	3
E <sup>1</sup>	Approved Technical Elective	3	0	3
E <sup>1</sup>	Approved Technical Elective	3	0	3
E <sup>2</sup>	Social Science Elective	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	12	0	12
Total Minimum Credits for Certificate .....				32

<sup>1</sup> Technical elective - requires departmental approval.

<sup>2</sup> Social science elective

**WORD PROCESSING**

(Career Studies)  
005

**Purpose:** This curriculum is designed for people who wish to refine existing skills in order to re-enter the work force or prepare themselves for a new position in word processing.

**Curriculum Admission Guidelines:** Student must meet the general requirements for admission to the college. Prerequisites: OFT 111 and 112 or credit by exam.

**Word Processing Curriculum**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>First Semester</b>				
OFT 215	Executive Keyboarding	3	0	3
OFT 216	Word Processing Equipment Operation	3	0	3
OFT 251	Office Systems and Procedures	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	9	0	9
<b>Second Semester</b>				
OFT 236	Word Processing Operation and System Operation	4	0	4
OFT 241	Machine Transcription I	3	0	3
OFT 252	Office Systems and Procedures	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	10	0	10
<b>Third Semester</b>				
OFT 205	Business Communications	3	0	3
OFT 235	Specialized Software Applications	<u>3</u>	<u>0</u>	<u>3</u>
	Total .....	6	0	6
Total Minimum Credits for Certificate .....				25





## PART VIII

**DESCRIPTION OF COURSES****Continuing Education and Community Services Programs**

In order to provide the widest possible diversification of educational opportunity, Virginia Western Community College schedules credit and noncredit courses and programs to meet educational and training needs outside the realm of traditional college studies. These include classes, institutes, forums, workshops, lectures, and courses to provide: (1) individual cultural enrichment; (2) individual job skill improvement; (3) hobby and leisure-time activity training; (4) service to commerce and industry in upgrading employee skills; and (5) special services focused on societal and community development.

State general-fund tax dollars are not used to support noncredit community service programs.

**General Course Information****COURSE NUMBERS**

Courses numbered 01-09 are developmental studies courses. These courses are designed to prepare students for college-level courses (primarily in the areas of English and mathematics). The credits earned in these courses are not applicable toward associate degree programs. These courses are graded on a Satisfactory/ Unsatisfactory basis and they do not effect students' grade point average. Students enrolled in developmental courses who do not achieve a Satisfactory (S) grade should re-enroll in order to complete all course objectives. Students ordinarily may repeat a course only once (refer to the policy on Repeating a Course).

Courses numbered 10-99 are basic occupational courses for certificate programs. The credits earned in these courses are applicable toward diploma and certificate programs but are not applicable toward an associate degree.

Courses numbered 100-199 are freshman courses applicable toward an associate degree or certificate, and courses numbered 200-299 are sophomore courses applicable toward an associate degree or certificate.

**COURSE CREDITS**

The credit for each course is indicated after the title in the course description. One credit is equivalent to one collegiate semester hour.

**COURSE HOURS**

The number of lecture hours in class each week (including lecture, seminar, and discussion hours) and/or the number of laboratory hours in class each week (including laboratory, shop, supervised study, and cooperative work experiences) are indicated for each course in the course description. The number of lecture and laboratory hours in class each week are also "contact" hours because it is time spent under the direct supervision of a faculty member.

**COURSE PREREQUISITES**

If any prerequisites are required before enrolling in a course, these prerequisites will be identified in the course description. Courses in special sequences (usually identified by the numerals I-II-III) require that prior courses or their equivalent be completed before enrolling in the advanced courses in that sequence. When corequisites are required for a course, usually the corequisites must be taken at the same time. The prerequisites or their equivalent must be completed satisfactorily before enrolling in a course unless special permission is obtained from the division chair and academic dean.

**General Usage Courses**

The following "General Usage Courses" apply to multiple curricula and all prefix sections. The titles and descriptions are generally applicable for such use.

(INSERT APPROPRIATE PREFIX) 90, 190, 290 COORDINATED PRACTICE IN (Insert appropriate discipline) (1-5 CR.)

Includes supervised practice in selected health agencies coordinated by the College. Credit/practice ratio maximum 1:5 hours.

May be repeated for credit. Variable hours.

(INSERT APPROPRIATE PREFIX) 90, 190, 290 COORDINATED INTERNSHIP IN (Insert appropriate discipline) (1-5 CR.)

Supervised on-the-job training in selected business, industrial, or service firms coordinated by the College. Credit/practice ratio maximum 1:5 hours. May be repeated for credit. Variable hours.

(INSERT APPROPRIATE PREFIX) 95, 195, 295 TOPICS IN (Insert appropriate discipline) (1-5 CR.)

Provides an opportunity to explore topical areas of interest to or needed by students. May be used also for special honors courses. May be repeated for credit. Variable hours.

(INSERT APPROPRIATE PREFIX) 96, 196, 296 ON-SITE TRAINING IN (Insert appropriate discipline) (1-5 CR.)

Specializes in career orientation and training program without pay in selected businesses and industry, supervised and coordinated by the College. Credit/work ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

(INSERT APPROPRIATE PREFIX) 97, 197, 297 COOPERATIVE EDUCATION IN (Insert appropriate discipline) (1-5 CR.)

Supervised on-the-job-training for pay in approved business, industrial, and service firms coordinated by the College's Cooperative Education Office. Is applicable to all occupational/technical curricula at the discretion of the College. Credit/work ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

(INSERT APPROPRIATE PREFIX) 98, 198, 298 SEMINAR AND PROJECT IN (Insert appropriate discipline) (1-5 CR.)

Required completion of a project or research report related to the student's occupational objective and a study of approaches to the selection and pursuit of career opportunities in the field. May be repeated for credit. Variable hours.

(INSERT APPROPRIATE PREFIX) 99, 199, 299 SUPERVISED STUDY IN (Insert appropriate discipline) (1-5 CR.)

Assigned problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

## **ACCOUNTING (ACC)**

**ACC 211-212 PRINCIPLES OF ACCOUNTING I-II (3 CR.) (3 CR.)** Corequisite: ACC 213-214. Presents accounting principles and their application to various businesses. Covers income determination, asset valuation, and financial reporting. Studies services, merchandising, and manufacturing operation, including internal controls, analysis of financial statements, cost accounting systems, and managerial concepts. Lecture 3 hours per week.

**ACC 213-214 PRINCIPLES OF ACCOUNTING LABORATORY I-II (1 CR.) (1 CR.)** Provides problem-solving experiences to supplement instruction in ACC 211-212. Must be taken concurrently with ACC 211-212. Laboratory 2 hours per week.

**ACC 215 COMPUTERIZED ACCOUNTING (3-4 CR.)** Prerequisite: ACC 212, ACC 214. Introduces the computer in solving accounting problems. Focuses on operation of computers. Presents the accounting cycle and financial statement preparation in a computerized system and other applications for financial and managerial accounting. Variable hours per week.

**ACC 223-224 INTERMEDIATE ACCOUNTING I-II (4 CR.) (3 CR.)** Prerequisite: ACC 212 and ACC 214 or equivalent. Analyzes principal elements of accounting systems and statements. Lecture 3 hours per week.

**ACC 225 MANAGERIAL ACCOUNTING (3 CR.)** Prerequisite: ACC 212, ACC 214. Presents the preparation, analysis and interpretation of accounting data for managerial decision making. Includes cost control, capital budgeting and pricing decisions. Lecture 3 hours per week.

**ACC 231 COST ACCOUNTING I (3 CR.)** Prerequisite: ACC 212, ACC 214. Presents cost-accounting methods and reporting as applied to job order, process, and standard cost accounting systems. Includes cost control, profit analysis, and other topics. Lecture 3 hours per week.

**ACC 241-242 AUDITING I-II (3 CR.) (3 CR.)** Prerequisite: ACC 224, ACC 241. Presents techniques of investigating, interpreting, and appraising accounting records and assertions. Studies internal control design and evaluation, evidence-gathering techniques and other topics. Lecture 3 hours per week.

**ACC 261 PRINCIPLES OF FEDERAL TAXATION I (3 CR.)** Prerequisite: ACC 212, ACC 214. Presents the study of federal taxation as it relates to individuals and other tax entities. Includes tax planning, compliance and reporting. Lecture 3 hours per week.

## **ADMINISTRATION OF JUSTICE (ADJ)**

**ADJ 100 SURVEY OF CRIMINAL JUSTICE (3 CR.)** Presents an overview of the United States criminal justice system; introduces the major system components — law enforcement, judiciary, and corrections. Lecture 3 hours per week.

**ADJ 105 THE JUVENILE JUSTICE SYSTEM (3 CR.)** Presents the evolution, philosophy, structures and processes of the American juvenile delinquency system; surveys the rights of juveniles, dispositional alternatives, rehabilitation methods and current trends. Lecture 3 hours per week.

**ADJ 106 CRIME AND JUSTICE IN AMERICA (3 CR.)** Examines current issues and trends of crime and responses (attitudes, behaviors, structures — both private and public) to crime. Lecture 3 hours per week.

**ADJ 107 SURVEY OF CRIMINOLOGY (3 CR.)** Surveys the volume and scope of crime; considers a variety of theories developed to explain the causation of crime and criminality. Lecture 3 hours per week.

**ADJ 110 INTRODUCTION TO LAW ENFORCEMENT (3 CR.)** Studies the philosophy and history of law enforcement, presenting an overview of the crime problem and policy response issues. Surveys the

jurisdictions and organizations of local, state, and federal law enforcement agencies. Examines the qualification requirements and career opportunities in the law enforcement profession. Lecture 3 hours per week.

**ADJ 115 PATROL PROCEDURES (3 CR.)** Describes, instructs and evaluates street-level procedures commonly employed by patrol offices in everyday law enforcement operations. Lecture 3 hours per week.

**ADJ 116 SPECIAL ENFORCEMENT TOPICS (3 CR.)** Considers contemporary issues, problems, and controversies in modern law enforcement. Lecture 3 hours per week.

**ADJ 118 CRISIS INTERVENTION AND CRITICAL ISSUES (3 CR.)** Addresses basic problems involved in crisis intervention and current critical issues in law enforcement and the administration of justice; emphasizes practical approaches to discover and implement solutions. Lecture 3 hours per week.

**ADJ 145 CORRECTIONS AND THE COMMUNITY (3 CR.)** Studies and evaluates the relationships and interactions between correctional organizations and free society. Focuses on the shared responsibility of the community and corrections agencies to develop effective programs for management and treatment of criminal offenders. Lecture 3 hours per week.

**ADJ 147 LOCAL ADULT DETENTION FACILITIES (3 CR.)** Studies security procedures in adult detention facilities, criteria for effective supervision of inmates, and the correctional aspects of inmate discipline. Presents concepts, programs, and planning considerations for jail management and the operation of adult detention facilities. Lecture 3 hours per week.

**ADJ 171-172 FORENSIC SCIENCE I-II (4 CR.) (4 CR.)** Introduces student to crime scene technology, procedures for sketching, diagramming, and using casting materials. Surveys the concepts of forensic chemistry, fingerprint classification/identification and latent techniques, drug identification, hair and fiber evidence, death investigation techniques, thin-layer chromatographic methods, and arson materials examination. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**ADJ 211-212 CRIMINAL LAW, EVIDENCE AND PROCEDURES I-II (3 CR.) (3 CR.)** Teaches the elements of proof for major and common crimes and the legal classification of offenses. Studies the kinds, degrees and admissibility of evidence and its presentation in criminal proceedings with emphasis on legal guidelines for methods and techniques of evidence acquisition. Surveys the procedural requirements from arrest to final disposition in the various American court systems with focus on the Virginia jurisdiction. Lecture 3 hours per week.

**ADJ 227 CONSTITUTIONAL LAW FOR JUSTICE PERSONNEL (3 CR.)** Surveys the basic guarantees of liberty described in the U. S. Constitution and the historical development of these restrictions on government power, primarily through U. S. Supreme Court decisions. Reviews rights of free speech, press, assembly, as well as criminal procedure guarantees (to counsel, jury trial, habeas corpus, etc.) as they apply to the activities of those in the criminal justice system. Lecture 3 hours per week.

**ADJ 228 NARCOTICS AND DANGEROUS DRUGS (3 CR.)** Surveys the historical and current usage of

narcotics and dangerous drugs. Teaches the identification and classification of such drugs and emphasizes the symptoms and effects on their users. Examines investigative methods and procedures utilized in law enforcement efforts against illicit drug usage. Lecture 3 hours per week.

**ADJ 236 PRINCIPLES OF CRIMINAL INVESTIGATION (3 CR.)** Surveys the fundamentals of criminal investigation procedures and techniques. Examines crime scene search, collecting, handling and preserving of evidence. Lecture 3 hours per week.

**ADJ 237 ADVANCED CRIMINAL INVESTIGATION (3 CR.)** Introduces specialized tools and scientific aids used in criminal investigation. Applies investigative techniques to specific situations and preparation of trial evidence. Prerequisite ADJ 236 or divisional approval. Lecture 3 hours per week.

**ADJ 241-242 CORRECTIONAL LAW I-II (3 CR.) (3 CR.)** Studies the legal rights and obligations of the convict-probationer, inmate, and parolee. Surveys methods of enforcing both rights and obligations and the responsibilities of corrections agencies and personnel under correctional law (constitutional, statutory, and regulatory provisions). Lecture 3 hours per week.

**ADJ 246 CORRECTIONAL COUNSELING (3 CR.)** Presents concepts and principles of interviewing and counseling as applied in the correctional setting. Lecture 3 hours per week.

**ADJ 248 PROBATION, PAROLE, AND TREATMENT (3 CR.)** Surveys the philosophy, history, organization, personnel and functioning of traditional and innovative probation and parole programs; considers major treatment models for clients. Lecture 3 hours per week.

## **AIR CONDITIONING AND REFRIGERATION (AIR)**

**AIR 121 AIR CONDITIONING AND REFRIGERATION I (3 CR.)** Prerequisite: MTH 02 or equivalent. Studies refrigeration theory, tools and equipment, soldering, brazing, refrigeration systems, system components, compressors, evaporators, metering devices. Provides laboratory application of refrigerators and freezers. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**AIR 122 AIR CONDITIONING AND REFRIGERATION II (3 CR.)** Prerequisite: AIR 121. Presents operations of commercial refrigeration systems, ice machines, design, installation and service, air conditioning and heat pumps. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**AIR 123-124 AIR CONDITIONING AND REFRIGERATION III-IV (3 CR.) (3 CR.)** Prerequisite: AIR 122. Psychometric properties of air, heat load and gain calculation, heated and chilled water systems, duct, design, air distribution and air comfort requirements. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

## **ARCHITECTURE (ARC)**

**ARC 100 INTRODUCTION TO ARCHITECTURE (3 CR.)** Outlines history and impact of architecture. Emphasizes dynamics and social aspects of

architecture and society; focuses on 19th and 20th century architectural forms. Lecture 3 hours per week.

**ARC 111 INTRODUCTION TO ARCHITECTURAL DRAFTING I (3 CR.)** Introduces basic architectural drafting techniques including lettering; geometric construction; orthographic, isometric, and perspective drawings; shade and shadow construction in plans and elevations; and architectural symbols, indications and conventions. Lecture 1 hour. Laboratory 6 hours. Total 7 hours per week.

**ARC 112 INTRODUCTION TO ARCHITECTURAL DRAFTING II (3 CR.)** Prerequisite: ARC 111 or equivalent. Studies various architectural and graphic techniques, including the use of pen and ink design and presentation drawings, and development of skills involved in the preparation of working drawings. Lecture 1 hour. Laboratory 6 hours. Total 7 hours per week.

**ARC 130 INTRODUCTION TO MATERIALS AND METHODS OF CONSTRUCTION (4 CR.)** Introduces the physical properties and characteristics of building materials and methods of construction. Includes review of residential and light commercial wood-frame construction techniques and an introduction to steel and concrete structural systems. Lecture 4 hours per week.

**ARC 140 PRINCIPLES OF CONSTRUCTION SAFETY (2 CR.)** Covers construction industry operations and hazards control. Includes principles and practices of accident prevention, cost analysis, investigation techniques, reporting, first aid, protection equipment and general safety principles. Lecture 2 hours per week.

**ARC 150 INTRODUCTION TO SOLAR INDUSTRY (3 CR.)** Surveys active and passive systems. Includes system design, heat loss calculation procedures, sizing of systems and determining solar contribution including computer applications. Lecture 3 hours per week.

**ARC 233 ADVANCED ARCHITECTURAL DRAFTING III (3 CR.)** Prerequisite: ARC 112, ARC 130. Introduces the procedures involved in architectural design and construction document processing. Requires preparation of set of working drawings for a residential design project. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

**ARC 234 ADVANCED ARCHITECTURAL DRAFTING IV (3 CR.)** Prerequisite: ARC 233. A continuation of Architectural Drafting III. Requires preparation of complete set of working drawings for a commercial design project. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

**ARC 244 BUILDING MECHANICAL EQUIPMENT (2 CR.)** Studies heating, air conditioning, plumbing and electrical equipment, materials and symbols. Employs building code interpretation of working drawings and coordination of mechanical and electrical features with structural and architectural design. Lecture 2 hours per week.

**ARC 255 CONSTRUCTION ESTIMATING (2 CR.)** Prerequisite: ARC 130 or departmental approval. Requires preparation of detailed material quantity surveys from plans and specifications for commercial construction. Discusses cost, bid, and contract procedures. Lecture 2 hours per week.

## **ART (ART)**

**ART 101-102 HISTORY AND APPRECIATION OF ART I-II (3 CR.) (3 CR.)** Presents the history and interpretation of architecture, sculpture, and painting. Begins with prehistoric art and follows the development of western civilization to the present. Lecture 3 hours per week.

**ART 121-122 DRAWING I-II (3-4 CR.) (3-4 CR.)** Develops basic drawing skills and understanding of visual language through studio instruction/lecture. Introduces concepts such as proportion, space, perspective, tone, and composition as applied to still life, landscape, and the figure. Uses drawing media such as pencil, charcoal, ink wash, and color media. Includes field trips and gallery assignments as appropriate. Variable hours per week.

**ART 131-132 FUNDAMENTALS OF DESIGN I-II (3 CR.) (3 CR.)** Explores the concepts of two- and three-dimensional design and color. May include field trips as required. Variable hours per week.

**ART 201-202 HISTORY OF ART I-II (3 CR.) (3 CR.)** Studies the historical conflict of art of the ancient, medieval, Renaissance and modern worlds. Lecture 3 hours per week.

**ART 211-212 HISTORY OF AMERICAN ART I-II (3 CR.) (3 CR.)** Surveys the history of American art from the 1600's to the present. Emphasizes architecture, sculpture, and painting. Includes crafts, decorative arts, and photography. Lecture 3 hours per week.

**ART 221-222 DRAWING III-IV (3 CR.) (3 CR.)** Prerequisite: ART 121. Introduces advanced concepts and techniques of drawing as applied to the figure, still life, and landscape. Gives additional instruction in composition, modeling, space, and perspective. Encourages individual approaches to drawing. Variable hours per week.

**ART 241-242 PAINTING I-II (3 CR.) (3 CR.)** Prerequisite: ART 121 or divisional approval. Introduces abstract and representational painting in acrylic and/or oil with emphasis on color composition and value. Variable hours per week.

**ART 243-244 WATERCOLOR I-II (3 CR.) (3 CR.)** Prerequisite: ART 121 or divisional approval. Presents abstract and representational painting in watercolor, with emphasis on design, color, composition, technique, and value. Lecture 1-2 hours. Studio instruction 2-4 hours. Total 4-6 hours per week.

**ART 251-252 COMMUNICATION DESIGN I-II (3 CR.) (3 CR.)** Prerequisites: ART 122 and ART 132. Studies the principles of visual communications as applied to advertising in newspapers, magazines, direct mail advertising, house organs, etc. Analyzes the influence of contemporary art on design. Variable hours per week.

**ART 281-282 GRAPHIC TECHNIQUES I-II (3 CR.) (3 CR.)** Prerequisites: ART 122 and ART 132. Focuses on the use of drawing instruments and materials. Introduces printing processes and the mechanics of reproduction. Employs MacIntosh computer for graphic design. Lecture 2 hours. Studio instruction 3 hours. Total 5 hours per week.

**ART 286 COMMUNICATION ARTS WORKSHOP (3 CR.)** Prerequisites: ART 251 and ART 281. Requires special project and/or research focusing on career opportunities. Teaches resume and portfolio

preparation and interview techniques. May include internship with a professional design firm. Requires instructor's approval. Lecture 1 hour. Studio instruction 4 hours. Total 5 hours per week.

## **AVIATION (ARO)**

**ARO 121 PRIVATE PILOT GROUND SCHOOL (3 CR.)** Presents the fundamental principles of flight, including theory of flight, aircraft standards and specifications, basic aircraft construction, weight and balance, navigation, meteorology, principles of radio communication, and application of aerophysics. Prepares students for the FAA examination for private pilot rating. Lecture 3 hours per week.

**ARO 122 INSTRUMENT PILOT GROUND SCHOOL (3 CR.)** Covers principles applicable to instrument aviation requirements. Includes study of aerodynamics pertaining to instrument flight, flight instruments and airways. Prepares students for the FAA examination for instrument pilot rating. Lecture 3 hours per week.

## **BIOLOGY (BIO)**

**BIO 101-102 GENERAL BIOLOGY I-II (4 CR.) (4 CR.)** Explores fundamental characteristics of living matter from the molecular level to the ecological community with emphasis on general biological principles. Introduces the diversity of living organisms, their structure, function, and evolution. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

**BIO 141-142 HUMAN ANATOMY AND PHYSIOLOGY I-II (4 CR.) (4 CR.)** Prerequisite: high school biology or BIO 101. Integrates anatomy and physiology of cells, tissues, organs, and systems of the body. Lecture 3 hours per week. Recitation and laboratory 2 hours per week. Total 5 hours per week.

**BIO 145 HUMAN ANATOMY AND PHYSIOLOGY FOR THE HEALTH SCIENCES (5 CR.)** Prerequisite: high school biology or BIO 101. Introduces human anatomy and physiology primarily to those planning to pursue an AAS degree in radiography. Covers basic chemical concepts, cellular physiology, as well as the anatomy and physiology of human organ systems. Lecture 4 hours. Laboratory 3 hours. Total 7 hours per week.

**BIO 215 PLANT LIFE OF VIRGINIA (3 CR.)** Focuses on identification and ecological relationships of the native plants of Virginia. Emphasizes shrubs, vines, weeds, wildflowers, ferns, and mushrooms. Lecture 2 hours. Recitation and laboratory 3 hours. Total 5 hours per week.

**BIO 256 GENERAL GENETICS (4 CR.)** Prerequisite: BIO 101. Explores the principles of genetics ranging from classical Mendelian inheritance to the most recent advances in the biochemical nature and function of the gene. Includes experimental design and statistical analysis. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

**BIO 285 BIOLOGICAL PROBLEMS IN CONTEMPORARY SOCIETY (3 CR.)** Discusses major biological problems facing society which may include environmental and health concerns such as pollution, bioengineering, drug abuse, conservation, famine and others. Lecture 3 hours per week.

## **BROADCASTING (BCS)**

**BCS 100 BROADCASTING IN AMERICA (3 CR.)** Studies broadcasting from experimental radio transmissions to satellite television, including topical examination of economics of American broadcasting and social control of American broadcasting. Lecture 3 hours per week.

**BCS 101-102 INTRODUCTION TO RADIO/TV PRODUCTION I-II (4 CR.) (4 CR.)** Introduces the field of radio and television communications including historical overview of the field. Teaches the organization, principles, theories, and aesthetics of radio and television production and operation from broadcast and non-broadcast points of view. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**BCS 111-112 SPEECH FOR RADIO/TV (3 CR.) (3 CR.)** Studies broadcast announcing, including phonetics, pronunciation, enunciation, technical problems, techniques and modes of articulatory expression in varied broadcast situations. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**BCS 125 TELEVISION DESIGN (3 CR.)** Corequisite: BCS 101. Studies design and use of television camera graphics, electronically generated graphic images, props and scenery, sets, lighting, and other special effects. Lecture 3 hours per week.

**BCS 201-202 ADVANCED RADIO/TV PRODUCTION I-II (5 CR.) (5 CR.)** Prerequisite: BCS 102. Teaches advanced radio and television program production and direction, including production environment and organization; producer-director responsibilities and techniques; and practical exercises in student production and direction. Lecture 3 hours. Laboratory 6 hours. Total 9 hours per week.

**BCS 227 TECHNICAL PROBLEMS OF RADIO/TV (3 CR.)** Prerequisite: BCS 102. Studies operating principles and characteristics of equipment comprising audio, video, editing, and transmission systems of radio/TV facilities, including special purpose processing equipment, production use of test equipment, signal routing, and troubleshooting techniques. Lecture 3 hours per week.

**BCS 235 RADIO/TV STATION MANAGEMENT AND OPERATION (3 CR.)** Prerequisite: BCS 102. Studies broadcast management responsibility and authority, beginning with overview of management theory. Includes inter- and intra-departmental relationships, social controls influencing managerial decision making. Lecture 3 hours per week.

**BCS 245 WRITING FOR RADIO/TV (3 CR.)** Prerequisite: BCS 102, ENG 101-102 or equivalent. Studies the planning and writing of news, documentaries, public affairs programming, and industrial/educational scripts for radio and television. Teaches writing theories and techniques, formats, audience analysis, functional and emotional appeals, and production considerations. Lecture 3 hours per week.

**BCS 247 BROADCAST ADVERTISING AND SALES (3 CR.)** Prerequisite: BCS 102. Analyzes advertising and sales functions in broadcast stations with emphasis on structure of sales department, rating systems, and rate cards. Teaches theory and gives practice in radio and television copywriting. Examines advertising agencies, media buyers, and research organizations in

context of their relationship to broadcasting industry. Lecture 3 hours per week.

**BCS 255 SOCIAL ISSUES IN AMERICAN BROADCASTING (3 CR.)** Prerequisite BCS 102. Provides critical and analytical study of dominant issues in contemporary broadcasting through readings, screenings, and discussions. Evaluates production values and ethics from industry and audience perspectives. Includes studies of violence and sex in media, free flow of information, influence of advertising, and the media's portrayal of minorities. Lecture 3 hours per week.

## **BUILDING (BLD)**

**BLD 111 BLUEPRINT READING AND THE BUILDING CODE (3 CR.)** Introduces reading and interpreting various kinds of blueprints and working drawings with reference to local, state, and national building codes. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

## **BUSINESS MANAGEMENT AND ADMINISTRATION (BUS)**

**BUS 100 INTRODUCTION TO BUSINESS (3 CR.)** Presents a broad introduction to the functioning of business enterprise within the U.S. economic framework. Introduces economic systems, essential elements of business organization, finance, marketing, production, and risk and human resource management. Lecture 3 hours per week.

**BUS 111 PRINCIPLES OF SUPERVISION I (3 CR.)** Teaches the fundamentals of supervision, including the primary responsibilities of the supervisor. Introduces factors relating to the work of supervisor and subordinates. Covers aspects of leadership, job management, work improvement, training and orientation, performance evaluation, and effective employee/supervisor relationships. Lecture 3 hours per week.

**BUS 112 PRINCIPLES OF SUPERVISION II (3 CR.)** Prerequisite: BUS 111. Develops skills in carrying out the responsibilities of a supervisor including interviewing, orienting new workers, training workers, evaluating and disciplining, and problem-solving techniques. Lecture 3 hours per week.

**BUS 125 APPLIED BUSINESS MATHEMATICS (3 CR.)** Prerequisite: MTH 120. Applies mathematics to business process and problems such as checkbook records and bank reconciliation, simple interest, present value, bank discount notes, depreciation, commercial discounts, markup and markdown, distribution of profit and loss in partnerships, distribution of corporate dividend, sinking funds, compound interest, amortization, annuities, and multiple payment plans. Lecture 3 hours per week.

**BUS 150 PRINCIPLES OF MANAGEMENT (3 CR.)** Teaches management and the management functions of planning, organizing, directing, and controlling. Focuses on application of management principles to realistic situations managers encounter as they attempt to achieve organizational objectives. Lecture 3 hours per week.

**BUS 155 APPLIED MANAGEMENT PRINCIPLES (3 CR.)** Focuses on management practices and issues.

May use case studies and/or management decision models to analyze and develop solutions to management problems. Prerequisite BUS 150. Lecture 3 hours per week.

**BUS 165 SMALL BUSINESS MANAGEMENT (3 CR.)** Identifies management concerns unique to small businesses. Introduces the requirements necessary to initiate a small business, and identifies the elements comprising a business plan. Presents information establishing financial and administrative controls, developing a marketing strategy, managing business operations, and the legal and government relationships specific to small businesses. Lecture 3 hours per week.

**BUS 205 HUMAN RESOURCE MANAGEMENT (3 CR.)** Introduces employment, selection, and placement of personnel, usage levels and methods, job descriptions, training methods and programs, and employee evaluation systems. Includes procedures for management of human resources and uses cases studies and problems to demonstrate implementation of these techniques. Lecture 3 hours per week.

**BUS 215 PURCHASING AND MATERIALS MANAGEMENT (3 CR.)** Teaches the principles of effective purchasing and management of materials and equipment. Includes determination of requirements, source selection, pricing, value analysis, contracting, inventory management, and equipment requisition decisions. Lecture 3 hours per week.

**BUS 221 BUSINESS STATISTICS I (3 CR.)** Prerequisite: MTH 163 or divisional approval. Focuses on statistical methodology in the collection, organization, presentation, and analysis of data; concentrates on measures of central tendency, dispersion, probability concepts and distribution, sampling, statistical estimation, normal and T distribution and hypotheses for means and proportions. Lecture 3 hours per week.

**BUS 222 BUSINESS STATISTICS II (3 CR.)** Prerequisite BUS 221 or divisional approval. Continues study of inferential statistics and application of statistical techniques and methodology in business. Includes analysis of variance, regression and correlation measurement of business and economic activity through the use of index numbers, trend, cyclical, and seasonal effects and the Chi-Square distribution and other non-parametric techniques. Lecture 3 hours per week.

**BUS 225 APPLIED BUSINESS STATISTICS (3 CR.)** Prerequisite MTH 120. Introduces statistics as a tool in decision making. Emphasizes ability to collect, present, and analyze data. Employs measures of central tendency and dispersion, statistical inference, index number, and time series analysis. Lecture 3 hours per week.

**BUS 241 BUSINESS LAW I (3 CR.)** Presents a broad introduction to legal environment of U.S. business. Develops a basic understanding of contract law and agency and government regulation. Lecture 3 hours per week.

**BUS 280 INTRODUCTION TO INTERNATIONAL BUSINESS (3 CR.)** Studies the problems, challenges, and opportunities that arise when business operations or organizations transcend national boundaries. Examines the functions of international business in the economy, international and transnational marketing,

production, and financial operations. Lecture 3 hours per week.

## **CHEMISTRY (CHM)**

**CHM 05 DEVELOPMENTAL CHEMISTRY FOR HEALTH SCIENCES (4 CR.)** Prerequisite: Algebra I. Introduces basic principles of inorganic chemistry. Emphasizes applications to the health sciences. Can be used as a preparatory course for CHM 111-112. Lecture 3 hours per week. Laboratory 2 hours per week. Total 5 hours per week.

**CHM 101-102 GENERAL CHEMISTRY I-II (4 CR.) (4 CR.)** Prerequisite: Algebra II. Emphasizes experimental and theoretical aspects of inorganic, organic, and biological chemistry. Discusses general chemistry concepts as they apply to issues within our society and environment. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**CHM 111-112 COLLEGE CHEMISTRY I-II (4 CR.) (4 CR.)** Prerequisite: Algebra II; High school chemistry or CHM 05 recommended but not required. Explores the fundamental laws, theories, and mathematical concepts of chemistry. Designed primarily for science and engineering majors. Requires a strong background in mathematics. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**CHM 241-242 ORGANIC CHEMISTRY I-II (3 CR.) (3 CR.)** Prerequisite: CHM 112 or equivalent. Introduces fundamental chemistry of carbon compounds, including structures, physical properties, syntheses, and typical reactions. Emphasizes reaction mechanisms. Lecture 3 hours per week.

**CHM 245-246 Organic Chemistry Laboratory I-II (2 CR.) (2 CR.)** Is taken concurrently with CHM 241 and CHM 242. Includes qualitative organic analysis. Laboratory 3 hours. Lecture 1 hour. Total 4 hours per week.

## **CIVIL ENGINEERING TECHNOLOGY (CIV)**

**CIV 130 CONSTRUCTION PLANNING (3 CR.)** Introduces the principles and economics of construction planning. Lecture 3 hours per week.

**CIV 145 APPLIED SOIL EROSION AND SEDIMENT CONTROL (2 CR.)** Focuses on the implementation of erosion and sediment control plans and inspection of construction sites based on local programs in accordance with Virginia law and the Virginia Erosion and Sediment Control Handbook. Lecture 2 hours per week.

**CIV 171 SURVEYING I (3 CR.)** Prerequisite: MTH 103, MTH 07 or equivalent. Introduces surveying equipment, procedures and computations including adjustment of instruments, distance measurement, leveling, angle measurement, traversing, traverse adjustments, area computations and introduction to topography. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**CIV 172 SURVEYING II (3 CR.)** Prerequisite: CIV 171 or departmental approval. Introduces surveys for transportation systems including the preparation and analysis of topographic maps, horizontal and vertical curves, earthwork, and other topics related to transportation construction. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

## **CIV 201 SUBURBAN DEVELOPMENT I (3 CR.)**

Prerequisite: CIV 171 or departmental approval. Presents the preparation of preliminary plans, subdivision computations and preparation of record plats for residential areas. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**CIV 218 STRUCTURAL DESIGN (4 CR.)** Prerequisite: MEC 132. Introduces the design, investigation, and detailing of structural steel and reinforced concrete members in building and highway construction. Lecture 4 hours per week.

## **CIV 230 CIVIL CONSTRUCTION MATERIALS (4 CR.)**

Introduces the basic properties of Portland cement concrete, soils and bituminous materials. Includes design and composition, placement, sampling, and testing of concrete, soils, and asphalt cements used in civil engineering construction. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

## **COMPUTER INFORMATION SYSTEMS (CIS)**

**CIS 110 FUNDAMENTALS OF COMPUTER INFORMATION SYSTEMS (3-4 CR.)** Provides a technical approach to concepts and terminology of computer information systems. Includes the study of computer information systems: hardware, software, methods of data processing, functions, capabilities, and limitations of computer systems. Exposes students to techniques used in system development. Includes "hands on" experience. Lecture 3 hours per week. Laboratory 0-2 hours per week. Total 3-5 hours per week.

**CIS 116 COMPUTERS AND INFORMATION SYSTEMS (1 CR.)** Introduces terminology, concepts and methods of using computers in information systems. This is a computer literacy course, not intended for Computer Information Systems majors. Lecture 1 hour per week.

**CIS 121 COMPUTER PROGRAMMING: BASIC I (4 CR.)** Prerequisite: CIS 110 or departmental approval. Teaches writing BASIC programs from stated problems or specifications, applying structured programming methods to produce satisfactory results. Provides specific skills for modifying and maintaining existing programs. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

**CIS 131 COMPUTER PROGRAMMING: COBOL I (4 CR.)** Teaches writing COBOL programs from stated problems or specifications and applying structured programming methods to produce satisfactory results. Provides specific skills for modifying and maintaining existing programs. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

**CIS 150 INTRODUCTION TO MICROCOMPUTER SOFTWARE (3-4 CR.)** Provides a working introduction to microcomputer software, fundamentals, and applications. Includes operating systems, word processing, spreadsheet, and database software. Variable hours per week.

**CIS 157 MICROCOMPUTER SPREADSHEET SOFTWARE (3-4 CR.)** Prerequisite: CIS 150 or departmental approval. Provides hands-on introduction to microcomputer spreadsheet software. Includes creating a spreadsheet for data analysis, integrating

information from data base, displaying results in graphic format, techniques for "what if" analyses, and introduction to macros. Offers a working knowledge of a commercial spreadsheet package. Variable hours per week.

**CIS 158 MICROCOMPUTER DATA BASE MANAGEMENT SOFTWARE (3-4 CR.)** Prerequisite: CIS 150 or departmental approval. Provides hands-on introduction to microcomputer software for database management. Teaches planning, defining, and using a data base; performing queries; producing reports; working with multiple files; and concepts of data base programming. Offers a working knowledge of a commercial data base package. Variable hours per week.

**CIS 161 COMPUTER PROGRAMMING: ASSEMBLER I (4 CR.)** Prerequisite: CIS 205 and CIS 231. Teaches writing ASSEMBLER programs from stated problems or specifications, applying structured programming methods to produce satisfactory results. Provides specific skills for modifying and maintaining existing programs. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

**CIS 166 MICROCOMPUTER INTEGRATED SOFTWARE (3-4 CR.)** Prerequisite: CIS 150 or departmental approval. Provides hands-on introduction to integrated software packages for microcomputers. Teaches integration of spreadsheet data base management with word processing and telecommunication software. Includes import/export facilities. Offers working knowledge of an integrated software package. Variable hours per week.

**CIS 171 COMPUTER PROGRAMMING: RPG (4 CR.)** Prerequisite: CIS 110 or departmental approval. Teaches writing RPG programs from stated problems or specifications, applying methods to produce satisfactory results. Provides specific skills for modifying and maintaining existing programs. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

**CIS 176 COMPUTER PROGRAMMING: C I (4 CR.)** Prerequisite: CIS 121. Teaches writing C programs from stated problem or specifications and applying structured program methods to produce satisfactory results. Provides specific skills for modifying and maintaining existing programs. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

**CIS 205 JOB CONTROL LANGUAGE (3-4 CR.)** Prerequisite: CIS 121 and CIS 131. Focuses on task flow, job flow, and operating systems communication through use of Job Control Language. Teaches the JCL statements, catalog procedures, symbolics, and load module/file interfaces. Variable hours per week.

**CIS 221 COMPUTER PROGRAMMING: BASIC II (4 CR.)** Prerequisite: CIS 121. Emphasizes advanced structure programming techniques and procedures for more complex problems. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

**CIS 225 COMPUTER INFORMATION SYSTEM DEVELOPMENT (3 CR.)** Prerequisite: CIS 158 and CIS 231. Presents a structured approach to defining needs, creating specifications, and implementing new information systems. Emphasizes business-oriented, computer-based systems. Defines common processes and procedures. Includes data modelling, report generation, life cycle methodology, and traditional and structured tools for development. Lecture 3 hours per week.

**CIS 230 INTRODUCTION TO TELECOMMUNICATIONS (3 CR.)** Prerequisite: CIS 150. Surveys data transmission systems, communication lines, data sets, network, modes of transmission. Emphasizes multiplexing in a network structure. Focuses on both intelligent and non-intelligent terminals. Lecture 3 hours per week.

**CIS 231 COMPUTER PROGRAMMING: COBOL II (4 CR.)** Prerequisite: CIS 131. Emphasizes advanced structured programming techniques and procedures for more complex problems. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

**CIS 287 SYSTEM DEVELOPMENT PROJECT (3 CR.)** Prerequisite: CIS 225. Applies life cycle system development methodologies in a case study. Incorporates feasibility study, system analysis, system design, program specification, and implementation planning. Involves assigning project to students as members of system development teams. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**CIS 295 COMPREHENSIVE REVIEW (1 CR.)** A comprehensive review of all computer topics taught in the CIS curriculum from the perspective that Information Systems Development is an integrated process. All materials, including languages, systems design and hardware concepts will be reviewed as a cohesive unit. (This course is pending VCCS approval.)

## **COMPUTER SCIENCE (CSC)**

**CSC 201 COMPUTER SCIENCE I (4 CR.)** Corequisite: MTH 175 or MTH 271 or high school calculus or equivalent. Introduces algorithm and problem-solving methods. Emphasizes structured programming concepts, elementary data structures and the study and use of a high level programming language. Lecture 4 hours per week.

**CSC 202 COMPUTER SCIENCE II (4 CR.)** Prerequisite: CSC 201. Examines data structures and algorithm analysis. Covers data structures (including sets, strings, stacks, queues, arrays, records, files, linked lists, and trees), abstract data types, algorithm analysis (including searching and sorting methods), and file structures. Lecture 4 hours per week.

## **DENTAL HYGIENE (DNH)**

**DNH 111 ORAL ANATOMY (2 CR.)** Studies the morphology and function of the oral structures with emphasis on the primary and permanent dentition, eruption sequence, occlusion, and intra-arch relationships. Lecture 2 hours per week.

**DNH 115 HISTOLOGY/HEAD AND NECK ANATOMY (3 CR.)** Presents a study of the microscopic and macroscopic anatomy and physiology of the head, neck, and oral tissues. Includes embryologic development and histologic components of the head, neck, teeth, and periodontium. Lecture 3 hours per week.

**DNH 120 MANAGEMENT OF EMERGENCIES (1 CR.)** Studies the various medical emergencies and techniques for managing emergencies in the dental setting. Lecture 1 hour per week.

**DNH 130 ORAL RADIOGRAPHY FOR THE DENTAL HYGIENIST (2 CR.)** Studies radiation physics, biology, safety, and exposure techniques for intra- and extra-oral radiographic surveys. Laboratory provides practice



in exposure, processing methods, mounting, and interpretation of normal findings. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

**DNH 141 DENTAL HYGIENE I (5 CR.)** Introduces clinical knowledge and skills for the performance of dental hygiene services; basic skill components, lab mannequins, and client practice. Lecture 3 hours. Clinic 6 hours. Total 9 hours per week.

**DNH 142 DENTAL HYGIENE II (5 CR.)** Prerequisite: DNH 141. Exposes students to instrument sharpening, time management, and client education techniques and methods. Provides supervised clinical practice in the dental hygiene clinic with emphasis on developing client treatment and instrument skills. Lecture 1 hour. Clinic 12 hours. Total 13 hours per week.

**DNH 145 GENERAL AND ORAL PATHOLOGY (2 CR.)** Introduces general pathology with consideration of the common diseases affecting the human body. Particular emphasis is given to the study of pathological conditions of the mouth, teeth, and their supporting structures. Lecture 2 hours per week.

**DNH 146 PERIODONTICS FOR THE DENTAL HYGIENIST (2 CR.)** Introduces the theoretical and practical study of various concepts and methods used in describing, preventing, and controlling periodontal disease. Presents etiology, microbiology, diagnosis, treatment and prognosis of diseases. Lecture 2 hours per week.

**DNH 150 NUTRITION (2 CR.)** Studies nutrition as it relates to dentistry and general health. Emphasizes the principles of nutrition as applied to the clinical practice of dental hygiene. Lecture 2 hours per week.

**DNH 190 DENTAL HYGIENE COORDINATED PRACTICE (3 CR.)** Prerequisite: DNH 142. Continues supervised clinical practice in the dental hygiene clinic with emphasis on coordinating didactic and clinical skills, and refining client treatment skills. Introduces special needs clients and treatment modifications. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**DNH 210 APPLICATION OF PERIODONTICS (1 CR.)** Prerequisite: DNH 146. Exposes students to the surgical aspects of periodontal therapy and the role of the hygienist in surgery and maintenance. Lecture 1 hour per week.

**DNH 215 DENTAL MATERIALS (3 CR.)** Studies the physical and chemical properties of the materials used in dentistry. Laboratory experiences emphasize proper manipulation of materials. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**DNH 216 PHARMACOLOGY (2 CR.)** Studies the chemical and therapeutic agents used in dentistry, including their preparation, effectiveness, and specific application. Lecture 2 hours per week.

**DNH 226 PUBLIC HEALTH DENTAL HYGIENE I (2 CR.)** Studies and compares concepts of delivery of health care, applying the public health delivery model. Epidemiologic methods, research and biostatistics are applied to oral health program planning, implementation, and evaluation. Incorporates and applies current health issues and trends. Lecture 2 hours per week.

**DNH 227 PUBLIC HEALTH DENTAL HYGIENE II (1 CR.)** Prerequisite: DNH 226. Applies concepts of public health program planning through student directed community projects with an emphasis on preventive oral health education. Includes development of table clinics, bulletin boards, and volunteer service in the community. Laboratory 3 hours per week.

**DNH 230 OFFICE PRACTICE AND ETHICS (1 CR.)** Studies the principles of dental ethics and economics as they relate to the dental hygienist. The course also includes a study of jurisprudence and office procedures. Lecture 1 hour per week.

**DNH 244 DENTAL HYGIENE IV (5 CR.)** Prerequisite: DNH 190. Introduces advanced skills and the dental hygienist's role in dental specialties. Includes supervised clinical practice in the dental hygiene clinic and/or off-campus clinical rotations at various community facilities. Emphasizes treatment of clients demonstrating periodontal involvement, stressing application and correlation of knowledge and skills from previous semesters. Lecture 1 hour. Clinic 12 hours. Total 13 hours per week.

**DNH 245 DENTAL HYGIENE V (5 CR.)** Prerequisite: DNH 244. Includes supervised clinical practice in the dental hygiene clinic and/or off-campus clinical rotations at various community facilities. Emphasis is placed on synthesis of knowledge from previous semesters, treatment of clients with moderate to advanced periodontal involvement, and improving clinical speed while maintaining quality in preparation for practice. Lecture 1 hour. Clinic 12 hours. Total 13 hours per week.

## **DRAFTING (DRF)**

**DRF 111-112-113 TECHNICAL DRAFTING I-II-III (2-CR.) (2 CR.) (2 CR.)** Introduces technical drafting from the fundamentals through advanced drafting practices. Teaches lettering, metric construction, technical sketching, orthographic projection, sections, intersections, development, fasteners, theory, and applications of dimensioning and tolerances. Includes pictorial drawing, and preparation of working and detailed drawings. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

**DRF 127 GEOMETRIC TOLERANCING (1 CR.)** Teaches use of a positional tolerance system, its relationship to coordinated tolerance systems, and other aspects of U.S. standard drafting practices. Lecture 1 hour per week.

**DRF 161 BLUEPRINT READING I (2 CR.)** Teaches the application of basic principles, visualization, orthographic projection, detail of drafting shop process and terminology, assembly drawings and exploded views. Considers dimensioning, changes, and corrections, classes of fits, tolerances and allowances, sections and convention in blueprint reading. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

**DRF 201 COMPUTER AIDED DRAFTING AND DESIGN I (2 CR.)** Prerequisite: DRF 111 or equivalent or departmental approval. Teaches computer-aided drafting concepts and equipment designed to develop a general understanding of components of a typical CAD system and its operation. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

**DRF 202 COMPUTER AIDED DRAFTING AND DESIGN II (2 CR.)** Prerequisite DRF 201. Teaches working drawings and advanced operations in computer aided drafting. Lecture 1 hours. Laboratory 3 hours. Total 4 hours per week.

## **EARLY CHILDHOOD DEVELOPMENT (CHD)**

**CHD 118 METHODS AND MATERIALS IN THE LANGUAGE ARTS FOR CHILDREN (3 CR.)** Presents techniques and methods for encouraging the development of language and perceptual skills in young children. Stresses improvement of vocabulary, speech and methods to stimulate discussion. Survey's children's literature, examines elements of quality story telling and story reading, and stresses the use of audio-visual materials. Lecture 2 hours and Laboratory 2 hours per week.

**CHD 120 INTRODUCTION TO EARLY CHILDHOOD EDUCATION (3 CR.)** Introduces early childhood development through activities and experiences in nursery, pre-kindergarten and primary programs. Investigates classroom organization and procedures, and the use of classroom time and materials, approaches to education for young children, professionalism, and curricular procedures. Lecture 3 hours per week.

**CHD 121-122 CHILDHOOD EDUCATIONAL DEVELOPMENT I-II (3 CR.) (3 CR.)** Focuses attention on the observable characteristics of children from birth through adolescence. Concentrates on cognitive, physical, social, and emotional changes that occur. Emphasizes the relationship between development and child's interactions with parents, siblings, peers, and teachers. Lecture 3 hours per week.

**CHD 125 CREATIVE ACTIVITIES FOR CHILDREN (3 CR.)** Prepares individuals to work with young children in the arts and other creative age-appropriate activities. Investigates affective classroom experiences and open-ended activities. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**CHD 126 METHODS AND MATERIALS FOR DEVELOPING SCIENCE AND MATHEMATICAL CONCEPTS IN CHILDREN (3 CR.)** Teaches selecting developmentally appropriate learning activities using materials to develop logical thinking skills in the child. Lecture 3 hours per week.

**CHD 165 OBSERVATION AND PARTICIPATION IN EARLY CHILDHOOD/ PRIMARY SETTINGS (3 CR.)** Observes and participates in early childhood settings such as child care centers, pre-schools, Montessori schools or public school settings. Kindergarten through 3rd grade. Students spend one hour each week in a seminar session in addition to 60 clock hours in the field. May be taken again for credit. Lecture 1 hour. Laboratory 6 hours. Total 7 hours per week.

**CHD 166 INFANT AND TODDLER PROGRAMS (3 CR.)** Examines the fundamentals of infant and toddler development, including planning and implementing programs in group care. Emphasizes meeting physical, social, emotional, and cognitive needs: scheduling, preparing age-appropriate activities, health and safety policies, record keeping, and reporting to parents. Lecture 3 hours per week.

**CHD 205 GUIDING THE BEHAVIOR OF CHILDREN (3 CR.)** Explores positive ways to build self-esteem in children and help them develop self-control. Presents practical ideas for encouraging pro-social behavior in children and emphasizes basic skills and techniques in classroom management. Lecture 3 hours per week.

**CHD 210 INTRODUCTION TO EXCEPTIONAL CHILDREN (3 CR.)** Reviews the history of education for exceptional children. Studies the characteristics associated with exceptional children. Explores positive techniques for managing behavior and adapting materials for classroom use. Lecture 3 hours per week.

**CHD 216 EARLY CHILDHOOD PROGRAMS, SCHOOL, AND SOCIAL CHANGE (3 CR.)** Explores methods of developing positive, effective relations between staff and parents to enhance the developmental goals of home and school. Reviews current trends and issues in education, describes symptoms of homes in need of support, investigates non-traditional family and cultural patterns, and lists community resources. Lecture 3 hours per week.

**CHD 265 ADVANCED OBSERVATION AND PARTICIPATION IN EARLY CHILDHOOD/PRIMARY SETTINGS (3 CR.)** Observes and participates in early childhood settings such as child care centers, pre-school, Montessori schools, or public school settings (kindergarten through third grade). Emphasizes planning and implementation of appropriate activities and materials for children. Students will spend one hour each week in a seminar session in addition to 60 clock hours in the field. May be taken again for credit. Lecture 1 hour. Laboratory 6 hours. Total 7 hours per week.

**CHD 270 ADMINISTRATION OF EARLY CHILDHOOD PROGRAMS (3 CR.)** Examines the skills needed for establishing and managing early childhood programs. Emphasizes professionalism and interpersonal skills, program planning, staff selection and development, creating policies, budgeting, and developing forms for recordkeeping. Lecture 3 hours per week.

## **ECONOMICS (ECO)**

**ECO 201-202 PRINCIPLES OF ECONOMICS I-II (3 CR.) (3 CR.)** Introduces principles of macroeconomics (ECO 201) and microeconomics (ECO 202) and considers their bearing on present conditions. Describes structural and functional aspects of the economy. Analyzes the organization of business, labor, and governmental institutions and their economic stability and growth. Presents measures of economic activity. Discusses private enterprise, economic growth and stabilization policies, monetary and fiscal policy. Considers international economic relationships and alternative economic systems. Lecture 3 hours per week.

**ECO 231-232 PRINCIPLES OF MONEY AND BANKING I-II (3 CR.) (3 CR.)** Discusses the functions of money in modern economy. Analyzes the evolution and operation of the commercial and central banking systems. Presents developments in monetary theory. Relates theory to policy considerations including government finance and debt management. Lecture 3 hours per week.

**ECO 245 CONTEMPORARY ECONOMIC ISSUES (3 CR.)** Prerequisite ECO 201. Presents major contemporary economic issues of the day. May focus

on issues such as energy, the environment, the farmer, the national debt, taxes, international trade, consumerism, and economic trends. Emphasizes proper analysis of economic problems and formulation of corrective policy. Develops the student's critical faculties by exposure to opinions of eminent economists and may offer open classroom debate. Lecture 3 hours per week.

## **EDUCATION (EDU)**

**see also EARLY CHILDHOOD DEVELOPMENT (CHD)**  
**EDU 100 INTRODUCTION TO EDUCATION (1 CR.)**  
 Provides an overview of teaching as a career with orientation to theories, practices, responsibilities, guidelines, current trends, and issues in education. Lecture 1 hour per week.

**EDU 149 HISTORY AND PHILOSOPHY OF EDUCATION FOR SCHOOL SECRETARIES (3 CR.)**  
 Acquaints secretaries with the history and philosophy of education in America. Focuses on current issues and their implications for social change. Lecture 3 hours per week.

## **ELECTRICAL TECHNOLOGY (ELE)**

**ELE 110 HOME ELECTRIC POWER (3 CR.)** Covers the fundamentals of residential power distribution, circuits, panels, fuse boxes, breakers, transformers. Includes study of the national electrical code, purpose, and interpretation. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**ELE 119 ELECTRICAL SHOP PRACTICES (1 CR.)**  
 Corequisite: ETR 113 or ETR 131 or consent of the instructor. Develops skills in the use of hand tools commonly found in the electrical and electronic industries. Covers soldering practices and P. C. board fabrication and repair. May require a variety of projects. Laboratory 3 hours per week.

**ELE 133-134 PRACTICAL ELECTRICITY I-II (3 CR.) (3 CR.)** Prerequisite: general math proficiency. Teaches the fundamentals of electricity, terminology, symbols, and diagrams. Includes the principles essential to the understanding of general practices, safety, and the practical aspects of residential and non-residential wiring and electrical installation. May require preparation of a report as an out-of-class activity. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**ELE 138 NATIONAL ELECTRICAL CODE (2 CR.)**  
 Teaches purpose and interpretation of the National Electrical Code as well as familiarizations with various charts, code rulings, and wiring methods. Lecture 2 hours per week.

**ELE 147 ELECTRICAL POWER AND CONTROL SYSTEMS (3 CR.)** Prerequisite: ELE 134 or equivalent. Reviews basic DC and AC circuits. Covers single-phase and three-phase AC power distribution systems, and protection devices, including types of AC motors. Presents analyzing and troubleshooting electrical control systems and motor protection devices. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**ELE 150 A.C. AND D.C. CIRCUIT FUNDAMENTALS (3 CR.)** Corequisite: MTH 113. Provides an intensive study of the fundamentals of direct and alternating current, resistance, magnetism, inductance and

capacitance, with emphasis on practical applications. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**ELE 211 ELECTRICAL MACHINES I (4 CR.)**  
 Prerequisite: ETR 132, MTH 114. Studies the construction, theory of operations and applications of DC and AC machines. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**ELE 239 PROGRAMMABLE CONTROLLERS (2 CR.)**  
 Prerequisite: ETR 280 and ELE 211 or consent of the instructor. Deals with installation, programming, interfacing, and concepts of troubleshooting programming controllers. Lecture 1 hour per week. Laboratory 2 hours per week. Total 3 hours per week.

## **ELECTRONICS TECHNOLOGY (ETR)**

**ETR 100 ELECTRONIC PROBLEM-SOLVING LABORATORY (1 CR.)** Corequisite: ETR 113. Focuses on enabling the student to improve skills in various areas of study. May include electronic measurements, circuit assembly, troubleshooting circuits, and computer applications to problem solving. Laboratory 3 hours per week.

**ETR 113 D.C. AND A.C. FUNDAMENTALS (4 CR.)**  
 Prerequisite: Algebra I. Studies D.C. and A.C. circuits, basic electrical components, instruments, network theorems, and techniques used to predict, analyze and measure electrical quantities. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**ETR 115 D.C. AND A.C. FUNDAMENTALS (2 CR.)**  
 Studies current flow in direct and alternating current circuits with emphasis upon practical problems. Reviews the mathematics used in circuit calculations. Introduces concepts of resistance, capacitance, inductance and magnetism. Lecture 2 hours per week.

**ETR 123 ELECTRONIC APPLICATIONS I (2 CR.)**  
 Corequisite: ETR 141. Provides laboratory and shop assignment/jobs as applied to basic electronic devices, circuits, and systems with emphasis on practical measurements. May require preparation of a report as an out-of-class activity. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

**ETR 131-132 ELECTRICAL CIRCUITS I-II (4 CR.) (4 CR.)** Corequisite: MTH 113-114. Studies D.C. and A. C. circuits, basic electrical components, instruments, laws and techniques used to predict, analyze, and measure electrical quantities. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**ETR 141-142 ELECTRONICS I-II (3 CR.) (3 CR.)**  
 Prerequisite: ETR 113. Introduces electronic devices as applied to basic electronic circuits and systems. Lecture 3 hours per week.

**ETR 148 AMPLIFIERS AND INTEGRATED CIRCUITS (4 CR.)** Prerequisite: ETR 113. Studies amplifiers, solid state and thermionic devices with emphasis on analysis and design of the time and frequency domain. Included also are linear and nonlinear op-amps circuits. May include summing and integrating amplifiers, choppers, modulators, and other new devices. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**ETR 231 PRINCIPLES OF LASERS AND FIBER OPTICS (3 CR.)** Prerequisite: MTH 114, PHY 101. Teaches the theory and application of lasers and fiber optics. Includes optics, fiber optic cables and

connectors, photo detectors, optical pulse generation sensors, multiplexers, lasers, gas lasers, semiconductor lasers, laser safety, and laser test instruments. May include preparation of a report as an out-of-class activity. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**ETR 241 ELECTRONIC COMMUNICATIONS (4 CR.)** Prerequisite: ETR 251. Studies noise, information and bandwidth, modulation and demodulation, transmitters and receivers, wave propagation, antennas and transmission lines. May include broad band communication systems, microwave, both terrestrial and satellite, fiber optics, multiplexing and associated hardware. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**ETR 251-252 ELECTRONIC DEVICES AND CIRCUIT ANALYSIS I-II (5 CR.) (5 CR.)** Prerequisite: MTH 114, ETR 132. Teaches theory and operation of semiconductor diodes, switch devices, regulators and power supplies. Includes discrete transistor and IC amplifier operating characteristics and design considerations for small and large signal amplifiers. Discusses theory and applications of feedback of amplifiers. Lecture 4 hours. Laboratory 3 hours. Total 7 hours per week.

**ETR 265 ADVANCED MICROPROCESSORS (5 CR.)** Prerequisite: ETR 280. Provides an in-depth treatment of microprocessors including machine level programming, memory structure, serial and parallel I/O devices. Lecture 4 hours. Laboratory 3 hours. Total 7 hours per week.

**ETR 280 INTRODUCTION TO DIGITAL LOGIC CIRCUITS AND COMPUTERS (4 CR.)** Prerequisite: ETR 132. Studies digital logic, Boolean algebra, and arithmetic circuits, using standard integrated circuits and the functional block approach. May include the study of registers, encoding and decoding, and multiplexing. Introduces concepts of computers, the internal operation and control language. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**ETR 281 DIGITAL SYSTEMS I (3 CR.)** Includes basic numbering systems, Boolean algebra, logic circuits and systems, pulse circuits and pulse logic systems as applied to computer and microprocessor technology. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**ETR 285 FUNDAMENTALS OF MICROCOMPUTER REPAIR (4 CR.)** Provides the student with an exposure to the various techniques and procedures used to troubleshoot a microcomputer. May include an overview of a particular microprocessor system, use of isolation flow charts, test point charts, prints, diagnostic routines, component testing and fault isolation labs. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

## **EMERGENCY MEDICAL TECHNOLOGY (EMT)**

**EMT 111 EMERGENCY MEDICAL TECHNOLOGY I (3 CR.)** Provides instruction in basic life support, physical assessment. Introduces role and responsibilities of the emergency medical technician/ambulance. Includes emergency operations, anatomy and physiology, bleeding, shock, MASTrousers, cardiopulmonary resuscitation, soft tissue injuries, fractures and dislocations, abdominal and chest injuries. Required for certification as a

Virginia EMT/A. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**EMT 112 EMERGENCY MEDICAL TECHNOLOGY II (3 CR.)** Prerequisite EMT 111. Continues material begun in EMT 112. Includes major trauma and medical emergencies, emergency childbirth procedures, lifting and moving patients, vehicle extrication, pediatric and environmental emergencies, and mass casualty situations. Required for certification as a Virginia EMT/A. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

## **ENGINEERING (EGR)**

**EGR 100 ENGINEERING TECHNOLOGY ORIENTATION (1 CR.)** Corequisite: MTH 103 or equivalent. Focuses on the roles and responsibilities of the engineering team, professional ethics, problem solving with hand calculator and computer applications. Lecture 1 hour. Laboratory 1 hours. Total 2 hours per week.

**EGR 115 ENGINEERING GRAPHICS (2 CR.)** Corequisite: MTH 166 or equivalent. Applies principles of orthographic projection and multi-view drawings. Teaches descriptive geometry including relationships of points, lines, planes and solids. Introduces sectioning, dimensioning, and computer graphic techniques. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

**EGR 120 INTRODUCTION TO ENGINEERING (2 CR.)** Corequisite: MTH 175 and MTH 177 or equivalent. Introduces the engineering profession, professional concepts, ethics, and responsibility. Reviews hand calculators, number systems, and unit conversions. Introduces the personal computer, operating systems and processing, engineering problem solving, and graphic techniques. Lecture 2 hours per week.

**EGR 125 INTRODUCTION TO ENGINEERING METHODS (3 CR.)** Prerequisite: EGR 120, MTH 175 and MTH 177 or equivalent. Applies problem-solving techniques to engineering problems utilizing computer programming and algorithms in a higher level computer language such as FORTRAN. Includes advanced graphics techniques. Lecture 3 hours per week.

**EGR 127 INTRODUCTION TO COMPUTER PROGRAMMING (2 CR.)** Corequisite: MTH 103 or equivalent. Focuses on the roles and responsibilities of the engineering team, introduces programming in a higher level language on the microcomputer (BASIC). Uses the operating system, packaged software and peripheral devices. Emphasizes engineering technology program problem solving using the calculator and computer. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

**EGR 140 ENGINEERING MECHANICS - STATICS (3 CR.)** Prerequisite: MTH 173, MTH 175 and MTH 177. Introduces mechanics of vector forces and space, scalar mass and time, including S.I. and U.S. customary units. Teaches equilibrium, free-body diagrams, moments, couples, distributed forces, centroids, moments of inertia analysis of two-force and multi-force members. Lecture 3 hours per week.

**EGR 206 ENGINEERING ECONOMY (3 CR.)** Prerequisite: MTH 271 or equivalent. Presents economic analysis of engineering alternatives. Studies economic and cost concepts, calculation of economic equivalence, comparison of alternatives, replacement

economy, economic optimization in design and operation, depreciation, and after tax analysis. Lecture 3 hours per week.

**EGR 216 COMPUTER METHODS IN ENGINEERING AND TECHNOLOGY (3 CR.)** Prerequisite: MTH 114 and either EGR 100, 125, 126, 127 or equivalent. Provides advanced level experience in using a computer as a tool for solving technical problems and performing office functions. Includes computer hardware and operating system usage, structured programming in a selected high level language, use of word processing software, computer graphics and spreadsheets. Assignments to focus on the analysis and solution of problems in engineering and technology. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**EGR 245 ENGINEERING MECHANICS - DYNAMICS (3 CR.)** Prerequisite: EGR 140. Presents approach to kinematics of particles in linear and curvilinear motion. Includes kinematics of rigid bodies in plane motion. Teaches Newton's second law, work-energy and power, impulse and momentum, and problem solving using computers. Lecture 3 hours per week.

**EGR 246 MECHANICS OF MATERIALS (3 CR.)** Prerequisite: EGR 140. Teaches concepts of stress, strain, deformation, internal equilibrium, and basic properties of engineering materials. Analyzes axial loads, torsion, bending, shear and combined loading. Studies stress transformation and principle stresses, column analysis and energy principles. Lecture 3 hours per week.

**EGR 247 MECHANICS OF MATERIALS LABORATORY (1 CR.)** Examines mechanical behavior of bars, rods, shafts, tubes and beams subjected to various types of loading. Introduces experimental stress analysis techniques, such as the use of strain gages and data reduction. Laboratory 2 hours per week.

## **ENGLISH (ENG)**

**ENG 01 PREPARING FOR COLLEGE WRITING I (1-6 CR.)** Helps students discover and develop writing processes needed to bring their proficiency to the level necessary for entrance into their respective curricula. Guides students through the process of starting, composing, revising, and editing. Variable hours per week.

**ENG 04 READING IMPROVEMENT I (1-6 CR.)** Helps students improve their reading processes to increase their understanding of reading materials. Includes word forms and meanings, comprehension techniques, and ways to control reading pace. Variable hours per week.

**ENG 07 WRITING AND READING IMPROVEMENT (6-8 CR.)** Provides an integrated approach to developing students' writing and reading processes. Prepares students to complete assignments successfully by providing them with reading and writing strategies. Variable hours per week.

**ENG 101-102 PRACTICAL WRITING I-II (3 CR.) (3 CR.)** Develops writing ability for study, work, and other areas of life with emphasis on occupational correspondence and reports. Guides students in learning writing as a process: understanding audience and purpose, exploring ideas and information, composing, revising, and editing. Supports writing by integrating experiences in thinking, reading, listening, and speaking. Lecture 3 hours per week.

**ENG 106 SPEED READING (3 CR.)** Emphasizes reading faster with comprehension. Includes controlling pace through scanning for specific details, skimming for main ideas, and reading quickly but completely. Presents common ways reading material is organized and techniques for processing information rapidly. Lecture 3 hours per week.

**ENG 107 CRITICAL READING (3 CR.)** Helps students refine their reading processes. Emphasizes applying and synthesizing ideas. Includes ways to detect organization, make inferences, draw conclusions, evaluate generalizations, recognize differences between facts and opinions, and other advanced comprehension strategies. May include comprehensive library skills. Lecture 3 hours per week.

**ENG 111-112 COLLEGE COMPOSITION I-II (3 CR.) (3 CR.)** Develops writing ability for study, work, and other areas of writing based on experience, observation, research, and reading of selected literature. Guides students in learning writing as a process: understanding audience and purpose, exploring ideas and information, composing, revising, and editing. Supports writing by integrating experiences in thinking, reading, listening, and speaking. Lecture 3 hours per week.

**ENG 115 TECHNICAL WRITING (3 CR.)** Develops ability in technical writing through extensive practice in composing technical reports and other documents. Guides students in achieving voice, tone, style, and content in formatting, editing, and graphics. Introduces students to technical discourse through selected reading. Lecture 3 hours per week.

**ENG 215-216 CREATIVE WRITING - FICTION I-II (3 CR.) (3 CR.)** Introduces the fundamentals and techniques of writing short and long fiction. Lecture 3 hours per week.

**ENG 217-218 CREATIVE WRITING - POETRY I-II (3 CR.) (3 CR.)** Introduces the fundamentals and techniques of writing poetry. Lecture 3 hours per week.

**ENG 241-242 SURVEY OF AMERICAN LITERATURE I-II (3 CR.) (3 CR.)** Prerequisite ENG 112. Examines American literary works from colonial times to the present, emphasizing the ideas and characteristics of our national literature. Involves critical reading and writing. Lecture 3 hours per week.

**ENG 243-244 SURVEY OF ENGLISH LITERATURE I-II (3 CR.) (3 CR.)** Prerequisite ENG 112. Studies major English works from the Anglo-Saxon period to the present, emphasizing ideas and characteristics of the British literary tradition. Involves critical reading and writing. Lecture 3 hours per week.

## **ENGLISH AS A SECOND LANGUAGE (ESL)**

**ESL 14 ENGLISH AS A SECOND LANGUAGE: ORAL AND WRITTEN COMMUNICATIONS I (3-6 CR.)** Provides practice in the sound, stress, intonation, structural patterns, grammar, vocabulary, and idioms of beginning-level English in frequently encountered situations. Variable hours per week.

**ESL 15 ENGLISH AS A SECOND LANGUAGE: ORAL AND WRITTEN COMMUNICATIONS II (3-6 CR.)**

Provides practice in the sound, stress, intonation, structural patterns, grammar, vocabulary, and idioms of intermediate-level English in frequently encountered situations. Variable hours per week.

**ENVIRONMENTAL SCIENCE AND TECHNOLOGY (ENV)**

**ENV 101-102 INTRODUCTION TO ENVIRONMENTAL TECHNOLOGY I-II (4 CR.)** Introduces students to basic scientific principles. Includes fundamentals of biology, chemistry, physics, and geology. Course integrates scientific disciplines as they relate to environmental technology. Lecture 3 hours. Laboratory 3 hours. Total 6 hours.

**ENV 110 INTRODUCTION TO WATER AND WASTE WATER TREATMENT TECHNOLOGY (3 CR.)**

Provides entry-level students with a general overview of the entire water supply, treatment, and disposal system. Traces water supply from raw state through treatment, storage, distribution, use, waste collection, and discharge back to the environment. Covers aspects of water supply and waste water treatment. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**ENV 120 INTRODUCTION TO AIR POLLUTION**

**(3 CR.)** Studies air pollution in relation to public health. Studies scientific, engineering, and legal aspects of pollution; sources and classification of pollutants, pollution metrology; sampling and measuring techniques; remedies and controls currently available. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**ENV 160 INTRODUCTION TO SOLID WASTE MANAGEMENT (3 CR.)**

Explores basic principles, including solid waste planning factors, disposal alternatives for special and hazardous wastes, disposal method selection, disposal site selection, hydro-geologic studies, site preparation plan, operations plan, leachate and methane collection plans, erosion and sediment control plan and final closure and stabilization plans. Lecture 3 hours per week.

**ENV 180 INTRODUCTION TO HAZARDOUS WASTE (2 CR.)**

Presents an overview of the hazardous material problems and explains employee responsibilities in the workplace. Emphasizes "Train the Trainer" so that the students will return to the workplace and instruct others. Lecture 2 hours per week.

**ENV 220 ENVIRONMENTAL PROBLEMS (3 CR.)**

Studies the relationship of man to his environment; ecological principles, population dynamics, topics of current importance including air, water, and noise pollution; poisoning and toxicity, radiation, conservation and management of natural resources. Lecture 3 hours per week.

**ENV 227 ENVIRONMENTAL LAW (2 CR.)**

Introduces environmental law including the history of environmental laws, the National Environment Policy Act, state environmental acts, hazardous wastes, endangered species, pollution, and surface mine reclamation. Lecture 2 hours per week.

**FINANCIAL SERVICES (FIN)**

**FIN 108 PRINCIPLES OF SECURITIES INVESTMENT (3 CR.)** Provides an introduction to the fundamentals of

the security investment process. Reviews the investment strategy associated with various types of stock orders, discusses the Fundamental and Technical approaches to common stock analysis, and examines bond and preferred stock pricing mechanisms. Also reviews the unique aspects of derivative security, mutual fund, real estate and limited partnership investments. Lecture 3 hours per week.

**FIN 110 PRINCIPLES OF BANKING (3 CR.)** Presents nearly every aspect of banking, providing a comprehensive introduction to the diversified services and operations of the banking industry. Focuses on new trends gaining attention in banking circles. Recommended for all banking students. Lecture 3 hours per week.

**FIN 215 FINANCIAL MANAGEMENT (3 CR.)**

Prerequisite: ACC 212, ACC 214. Introduces the process of identifying and solving financial problems confronting the business enterprise. Includes topics such as the basic tools of financial analysis, working capital, capital budgeting, and long-term financing. Uses problems and cases to enhance skills in financial planning and decision making. Lecture 3 hours per week.

**FIRE SCIENCE (FIR)****FIR 100 INTRODUCTION TO FIRE SCIENCE (3 CR.)**

Introduces basic concepts involved in fire suppression including fire behavior, building codes built in protection systems, and the life safety code. Discusses the history and philosophy of the fire service at the national, state, and local levels and analyzes the overall fire problem. Lecture 3 hours per week.

**FIR 106 FIRE SUPPRESSION METHODS AND OPERATIONS (3 CR.)**

Prerequisite FIR 100 or divisional permission. Introduces the concepts of emergency management and incident command. Discusses basic concepts of fire suppression and incident control, including the establishment of priorities, size-up, strategic goals and tactical objectives. Lecture 3 hours per week.

**FIR 111 HAZARDOUS MATERIALS I (3 CR.)**

Introduces the chemistry of hazardous materials including solids, liquids, gases, and methods used in their identification. Examines the use, handling, transportation, and environmental problems associated with hazardous materials. Lecture 3 hours per week.

**FIR 115 FUNDAMENTALS OF FIRE PREVENTION (3 CR.)**

Introduces fire safety through study of fire causes, inspections and investigation procedures. Familiarizes students with laws, ordinances, and codes which influence the field of fire prevention and studies the legal aspects of fire prevention and related problems. Lecture 3 hours per week.

**FIR 125 FIRE SERVICE ADMINISTRATION (3 CR.)**

Studies fire service organization and management, administrative procedures and methods, budgeting and reporting, control of resources, and the maintenance of records. Discusses managerial attitudes and decisions, general organizational planning, and career development. Lecture 3 hours per week.

**FIR 135 METHODS OF INSTRUCTION (3 CR.)**

Emphasizes development of teaching methods and aids, including role-playing, small group discussion and development of individual learning methods and

materials. Requires students to develop lesson plans and make presentations on appropriate topics. Lecture 3 hours per week.

**FIR 220 BUILDING CONSTRUCTION (3 CR.)** Teaches fundamentals of building construction, design, and materials as applied to fire resistance and special fire protection features. Gives attention to hazards, venting, heating, air conditioning, and electrical systems including exits, special structures, demolition, and evaluation of structural fire damage. Gives special consideration to high density areas with high fire hazard potential. Exposes students to basic blueprint reading. Lecture 3 hours per week.

**FIR 221 BUILDING CONSTRUCTION AND CODES (3 CR.)** Considers effect of fire on structures and inherent dangers of failure due to fire attack as well as ways various types and methods of building construction can influence the tactics and strategy of fire fighting. Discusses the importance of corrective building and fire prevention codes and control of hazards within current legal framework. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

**FIR 230 INVESTIGATION PROCEDURES (3 CR.)** Prerequisite FIR 105. Introduces the development and philosophy of fire investigation and detection, including inspection techniques, gathering of evidence and development of a criminal procedure to conform to judicial requirements. Lecture 3 hours per week.

## **FOOD SERVICE MANAGEMENT**

**HRI 120 PRINCIPLES OF FOOD PREPARATION (4 CR.)** Applies scientific principles and techniques to the preparation of food, including carbohydrates, fats, and proteins. Includes preparation of fruits and vegetables, sugars and starches, meats, fish, and vegetables. Lecture 3 hours. Laboratory 3 hours. Total 6 hours.

**HRI 158 SANITATION AND SAFETY (3 CR.)** Covers the moral and legal responsibilities of management to insure a sanitary and safe environment in a food service operation. Emphasizes the causes and prevention of foodborne illnesses in conformity with federal, state and local guidelines. Focuses on OSHA standards in assuring safe working conditions. Lecture 3 hour per week.

**HRI 221-222 QUANTITY FOOD PREPARATION I-II (4 CR.) (4 CR.)** Applies principles, standards, and practices of cooking and baking in large quantity food production. Prerequisites HRI 120. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

## **FRENCH (FRE)**

**FRE 101-102 BEGINNING FRENCH I-II (4 CR.) (4 CR.)** Introduces understanding, speaking, reading, and writing skills and emphasizes basic French sentence structure. Lecture 4 hours per week.

**FRE 201-202 INTERMEDIATE FRENCH I-II (4 CR.) (4 CR.)** Prerequisite French 102 or equivalent. Continues to develop understanding, speaking, reading, and writing skills. French is used in the classroom. Lecture 4 hours per week.

## **GEOGRAPHY (GEO)**

**GEO 200 INTRODUCTION TO PHYSICAL GEOGRAPHY (3 CR.)** Studies major elements of the natural environment including earth-sun relationship, land forms, weather and climate, natural vegetation, and soils. Introduces the student to types and uses of maps. Lecture 3 hours per week.

**GEO 210 PEOPLE AND THE LAND: AN INTRODUCTION TO CULTURAL GEOGRAPHY (3 CR.)** Focuses on the relationship between culture and geography. Presents a survey of modern demographics, landscape modification, material and non-material culture, language, race and ethnicity, religion, politics, and economic activities. Introduces the student to types and uses of maps. Lecture 3 hours per week.

## **GEOLOGY (GOL)**

**GOL 105 PHYSICAL GEOLOGY (4 CR.)** Introduces the composition and structure of the earth and modifying agents and processes. Investigates the formation of minerals and rocks, weathering, erosion, earthquakes, and crustal deformation. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**GOL 106 HISTORICAL GEOLOGY (4 CR.)** Prerequisite: GOL 105 recommended but not required. Traces the evolution of the earth and life through time. Presents scientific theories of the origin of the earth and life and interprets rock and fossil record. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**GOL 225 Environmental Geology (4 CR.)** Explores the interaction between man and his physical environment. Stresses geological hazards and environmental pollution utilizing case histories. Prerequisite GOL 105. Lecture 3 hours per week. Laboratory 3 hours per week. Total 6 hours per week.

## **GERMAN (GER)**

**GER 101-102 BEGINNING GERMAN I-II (4 CR.) (4 CR.)** Introduces understanding, speaking, reading, and writing skills and emphasizes basic German sentence structure. Lecture 4 hours per week.

**GER 201-202 INTERMEDIATE GERMAN I-II (4 CR.) (4 CR.)** Prerequisite GER 102. Continues to develop understanding, speaking, reading, and writing skills. German is used in the classroom. Lecture 4 hours per week.

## **HEALTH (HLT)**

**HLT 105 CARDIOPULMONARY RESUSCITATION (1 CR.)** Provides training in coordinated mouth-to-mouth artificial ventilation and chest compression, choking, life-threatening emergencies, and sudden illness. Lecture 1 hour per week.

**HLT 106 FIRST AID AND SAFETY (2 CR.)** Focuses on the principles and techniques of safety and first aid. Lecture 2 hours per week.

**HLT 110 CONCEPTS OF PERSONAL AND COMMUNITY HEALTH (2 CR.)** Studies the concepts related to the maintenance of health, safety, and the prevention of illness at the personal and community level. Lecture 2 hours per week.

**HLT 116 PERSONAL WELLNESS (3 CR.)** Explores the relationship between personal health and physical fitness as they apply to individuals in today's society. Includes nutrition, weight control, stress, conditioning, and drugs. Lecture 3 hours per week.

**HLT 121 INTRODUCTION TO DRUG USE AND ABUSE (3 CR.)** Explores the use and abuse of drugs in contemporary society with emphasis upon sociological, physiological, and psychological effects of drugs. Lecture 3 hours per week.

**HLT 122 INTRODUCTION TO ALCOHOL ABUSE AND CONTROL (1 CR.)** Explores the physiological, psychological, sociological effects of alcohol. Studies why people drink, disease concepts, alcohol tolerance curves, and alcohol's effect on the operation of a motor vehicle. Lecture 1 hour per week.

**HLT 135 CHILD HEALTH AND NUTRITION (3 CR.)** Focuses on the physical needs of the preschool child and the methods by which these are met. Emphasizes health routines, hygiene, nutrition, feeding and clothing habits, childhood diseases, and safety as related to health, growth, and development. Lecture 3 hours per week.

**HLT 143-144 MEDICAL TERMINOLOGY I-II (3 CR.) (3 CR.)** Provides an understanding of medical abbreviations and terms. Includes the study of prefixes, suffixes, word stems, and technical terms with emphasis on proper spelling, pronunciation, and usage. Emphasizes more complex skills and techniques in understanding medical terminology. Lecture 3 hours per week.

**HLT 230 PRINCIPLES OF NUTRITION AND HUMAN DEVELOPMENT (3 CR.)** Teaches the relationship between nutrition and human development. Emphasizes nutrients, balanced diet, weight control, and the nutritional needs of the individual. Lecture 3 hours per week.

## **HEALTH INFORMATION TECHNOLOGY (HIT)**

**HIT 121 MEDICAL TRANSCRIPTION I (4 CR.)** Develops skills in the transcription of various medical record reports, use of transcription references and proof reading reports. Includes analysis of transcription department services and the quality of transcribed reports and equipment. Clinical 12 hours per week.

**HIT 125 MEDICAL REPORT TRANSCRIPTION (3 CR.)** Develops skill in the transcription and preparation of reports for the medical record and in the operation and care of dictating and transcribing equipment. Prerequisite OFT 112 or department approval. Laboratory 12 hours per week.

**HIT 196 ON-SITE TRAINING IN MEDICAL TRANSCRIPTION (3 CR.)** Specializes in career orientation and training program without pay in selected businesses and industry, supervised and coordinated by the College. Credit/work ratio not to exceed 1.5 hours. May be repeated for credit. Variable hours.

## **HISTORY (HIS)**

**HIS 101-102 HISTORY OF WESTERN CIVILIZATION I-II (3 CR.) (3 CR.)** Examines the development of western civilization from ancient times to the present. The first semester ends with the seventeenth century;

the second semester continues through modern times. Lecture 3 hours per week.

**HIS 121-122 UNITED STATES HISTORY I-II (3 CR.) (3 CR.)** Surveys United States history from its beginning to the present. Lecture 3 hours per week.

**HIS 126 WOMEN IN WORLD HISTORY (3 CR.)** Studies the role of women and attitudes toward women from ancient times to the present. Lecture 3 hours per week.

**HIS 127 WOMEN IN AMERICAN HISTORY (3 CR.)** Studies the role of women and attitudes toward women in American society from colonial times to the present. Lecture 3 hours per week.

**HIS 141-142 AFRO-AMERICAN HISTORY I-II (3 CR.) (3 CR.)** Surveys the history of black Americans from their African origins to the present. Lecture 3 hours per week.

**HIS 267 THE SECOND WORLD WAR (3 CR.)** Examines causes and consequences of the Second World War. Includes the rise of totalitarianism, American neutrality, military developments, the home fronts, diplomacy, and the decision to use the atomic bomb. Lecture 3 hours per week.

**HIS 269 CIVIL WAR AND RECONSTRUCTION (3 CR.)** Studies factors that led to the division between the States. Examines the war, the home fronts, and the era of Reconstruction. Lecture 3 hours per week.

**HIS 276 UNITED STATES HISTORY SINCE WORLD WAR II (3 CR.)** Investigates United States history from 1946 to the present, studying both domestic developments and American involvement in international affairs. Lecture 3 hours per week.

**HIS 281-282 HISTORY OF VIRGINIA I-II (3 CR.) (3 CR.)** Examines the cultural, political, and economic history of the Commonwealth from its beginning to the present. Lecture 3 hours per week.

## **HORTICULTURE (HRT)**

**HRT 100 INTRODUCTION TO HORTICULTURE (3 CR.)** Introduces commercial horticulture industry with emphasis on career opportunities. Examines equipment, facilities, and physical arrangements of production, wholesale and retail establishments. Surveys individual fields within horticulture. Introduces growing, facility maintenance, transplanting and planting. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**HRT 115 PLANT PROPAGATION (3 CR.)** Teaches principles and practices of sexual and asexual methods. Examines commercial and home practices. Provides experience in techniques using seed-spores, cuttings, grafting, budding, layering, and division. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**HRT 121 GREENHOUSE CROP PRODUCTION I (3 CR.)** Examines commercial practices related to production of floricultural crops. Considers production requirements, environmental control and management, and cultural techniques affecting production of seasonal crops. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**HRT 127 HORTICULTURAL BOTANY (3 CR.)** Studies taxonomy, anatomy, morphology, physiology, and genetics of plants. Stresses their importance in plant



identification, propagation, and culture. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**HRT 201-202 LANDSCAPE PLANT MATERIALS I-II (3 CR.) (3 CR.)** Studies in detail landscape use of various plant materials. Considers ornamental value, growth habit, identification, and limitations. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**HRT 205 SOILS (3 CR.)** Teaches theoretical and practical aspects of soils and other growing media. Examines media components, chemical and physical properties, and soil organisms. Discusses management and conservation. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**HRT 207 PLANT PEST MANAGEMENT (3 CR.)** Teaches principles of plant pest management. Covers morphology and life cycles of insects and other small animal pests and plant pathogens. Lab stresses diagnosis, chemical and non-chemical control of specific pests, and pesticide safety. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**HRT 231 PLANTING DESIGN I (3 CR.)** Applies landscape theory and principles of drawing to the planning of landscape designs for residential and small scale commercial projects. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**HRT 232 PLANTING DESIGN II (3 CR.)** Applies landscape theory and principles of drawing to the planning of landscape designs for large-scale projects. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**HRT 236 INTERIOR LANDSCAPING (2 CR.)** Examines principles and practices of interior landscaping in residential and commercial buildings. Covers design, selection, planting, and maintenance of plant materials suitable for indoor use. Includes assessment of client needs, preparation of contracts and specifications, and construction materials. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

**HRT 247 INDOOR PLANTS (2 CR.)** Considers problems unique to the growth of indoor plants and their use in interior landscaping. Covers identification, uses, culture, and propagation of specific indoor plants. Teaches scientific and common names of plants. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

**HRT 260 INTRODUCTION TO FLORAL DESIGN (3 CR.)** Serves as a practical introduction to floral designs. Teaches basic methods of design and floral arrangement. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**HRT 265 PROFESSIONAL FLORAL DESIGN AND SHOP MANAGEMENT (3 CR.)** Prerequisite HRT 260. Studies style and composition of floral arrangements. Considers location, management and operation of a flower shop. Covers arrangements of flowers for home, church, hotels, and public buildings. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**HRT 267 SILK AND DRIED FLOWER ARRANGING (2 CR.)** Concentrates on conventional and contemporary approaches to floral design. Teaches use of silk and dried flowers for holidays and special occasions. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

### **HRT 269 PROFESSIONAL TURF CARE (3 CR.)**

Discusses careers in the turf industry. Stresses turfgrass identification, selection, culture, propagation, and pest control from a commercial standpoint. Surveys turf care operations and use of common equipment. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**HRT 275 LANDSCAPE CONSTRUCTION AND MAINTENANCE (3 CR.)** Examines practical applications of construction techniques used commercially. Surveys landscape construction materials used. May include construction, planting, and maintenance of a landscaping project. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**HRT 285 MANAGEMENT OF A HORTICULTURE BUSINESS (3 CR.)** Studies the business and selling practices which relate to wholesale and retail horticulture businesses including garden centers, greenhouses, nurseries, and flower shops. Examines planning and layout, suppliers, merchandising, maintenance, and display of horticultural items. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

## **HUMANITIES (HUM)**

**HUM 201 SURVEY OF WESTERN CULTURE I (3 CR.)** Studies thought, values, and arts of Western culture, integrating major developments in art, architecture, literature, music, and philosophy. Covers the following periods: Ancient and Classical, Early Christian and Byzantine, Medieval, and Early Renaissance. Lecture 3 hours per week.

**HUM 202 SURVEY OF WESTERN CULTURE II (3 CR.)** Studies thought, values, and arts of Western culture, integrating major developments in art, architecture, literature, music, and philosophy. Covers the following periods: Renaissance, Baroque, Enlightenment, Romantic, and Modern. Lecture 3 hours per week.

## **INDUSTRIAL TECHNOLOGY PROGRAM (IND)**

**IND 113 MATERIALS AND PROCESSES IN MANUFACTURING I (2 CR)** Studies materials and processes for the manufacturing of products. Investigates the nature of various materials. Examines the manufacturing processes of industry and their effects on materials. Lecture 2 hours per week.

**IND 140 — Quality Control (2 CR)** Studies history, structure, and organization of the quality control unit. May include incoming material control, project and process control, and cost control. Lecture 2 hours per week.

**IND 230 APPLIED QUALITY CONTROL (3 CR.)** Studies principles of inspection and quality assurance with emphasis on statistical process control. May include the setting up, maintaining, and interpreting of control charts, and review of basic metrology. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

## **INTERIOR DESIGN (IDS)**

**IDS 100 THEORY AND TECHNIQUES OF INTERIOR DESIGN (3 CR.)** Introduces drafting and presentation, color theory, and coordination, space planning and

arrangement of furnishings. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**IDS 235 ANTIQUES (3 CR.)** Involves the process of research, authentication, and determining provenance. Covers examples of furnishings, fixtures, textiles, glass, and ceramics. May provide field trips, lectures, examination, and discussion to assist in determining age, condition and other properties. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

## **LEGAL ADMINISTRATION (LGL)**

**LGL 110 INTRODUCTION TO LAW AND THE LEGAL ASSISTANT (3 CR.)** Introduces various areas of law in which a legal assistant will be working. Includes intense study of court system (Virginia and federal) as well as a brief overview of criminal law, torts, domestic relations, evidence, ethics, the role of the legal assistant and other areas of interest. Lecture 3 hours per week.

**LGL 115 REAL ESTATE LAW (3 CR.)** Studies law of real property and gives in-depth survey of more common types of real estate transactions and conveyances such as deeds, contracts, leases, and deeds of trust. Focuses on drafting problems involving these various instruments. Includes research projects and studies the system of recording and search of public documents. Lecture 3 hours per week.

**LGL 116 DOMESTIC RELATIONS AND CONSUMER LAW (3 CR.)** Studies elements of a valid marriage, grounds for divorce and annulment, separation, defenses, custody, support, adoptions, and applicable tax consequences. Focuses on separation and prenuptial agreements, pleadings, and rules of procedure. May include specific federal and Virginia consumer laws. Lecture 3 hours per week.

**LGL 117 FAMILY LAW (3 CR.)** Prerequisite: LGL 110. Covers divorce, Juvenile and Domestic Court matters, adoptions, annulments, suits to affirm marriage, and suits for separate maintenance. Lecture 3 hours per week.

**LGL 125 LEGAL RESEARCH (3 CR.)** Provides an understanding of various components of a law library, and emphasizes research skills through the use of digests, encyclopedias, reporter systems, codes, Shepards, ALR, and other research tools. Lecture 3 hours per week.

**LGL 126 LEGAL WRITING (3 CR.)** Studies proper preparation of various legal documents, including case and appeal briefs, legal memoranda, letters, and pleadings. Involves practical applications. Requires competence in English grammar. Lecture 3 hours per week.

**LGL 200 ETHICS FOR THE LEGAL ASSISTANT (1 CR.)** Examines general principles of ethical conduct applicable to legal assistants. Includes the application of rules of ethics to the practicing legal assistant. Lecture 1 hour per week.

**LGL 210 STATE AND FEDERAL PROCEDURE (3 CR.)** Examines in depth the rules of procedure in Virginia and federal courts, including the Federal Rules of Civil Procedure and the Rules of Practice and Procedure in General District and Circuit Court of Virginia. Lecture 3 hours per week.

**LGL 215 TORTS (3 CR.)** Studies fundamental principles of the law of torts, including preparation and use of pleadings and other documents involved in the

trial of a civil action. Emphasizes personal injury and medical malpractice cases. Lecture 3 hours per week.

**LGL 216 TRIAL PREPARATION AND DISCOVERY PRACTICE (3 CR.)** Studies the preparation of a trial notebook, pretrial orders, use of interrogatories, depositions, and other discovery tools used in assembling evidence in preparation for trial or an administrative hearing. Lecture 3 hours per week.

**LGL 218 CRIMINAL LAW (3 CR.)** Focuses on major crimes: their classification, elements of proof, intent, conspiracy, responsibility, parties, and defenses. Emphasizes Virginia Law. Gives general principles of applicable constitutional law and criminal procedures. Lecture 3 hours per week.

**LGL 220 ADMINISTRATIVE PRACTICE AND PROCEDURE (3 CR.)** Surveys Administrative Process Act and Virginia Freedom of Information Act. Studies practice and procedure involving ABC Commission, State Corporation Commission, Industrial Commission, Social Security Administration and Unemployment Commission. Lecture 3 hours per week.

**LGL 225 ESTATE PLANNING AND PROBATE (3 CR.)** Introduces various devices used to plan an estate, including wills, trust, joint ownership and insurance. Considers various plans in light of family situations and estate objectives. Focuses on practices involving administration of an estate including taxes and preparation of forms. Lecture 3 hours per week.

**LGL 226 REAL ESTATE ABSTRACTING (3 CR.)** Reviews aspects of abstracting title to real estate, recordation of land transactions, liens, grantor-grantee indices, warranties, covenants, restrictions, dower and courtesy rights and easements. Lecture 3 hours per week.

**LGL 227 ADMINISTRATION OF DECEDENT'S ESTATES (3 CR.)** Teaches students how to administer an estate efficiently. Includes instruction on substantive areas of law and preparation of forms and provides samples for the efficient administration of decedent's estates. Lecture 3 hours per week.

**LGL 230 LEGAL TRANSACTIONS (3 CR.)** Introduces commercial principles and practices and Uniform Commercial Code. Emphasizes contracts, warrants, title, consideration, performance, parties, subject matter and remedies for breach, torts, sales, negotiable instruments, consumer protection, insurance, wills and inheritance, bankruptcy, and statute of limitations. Lecture 3 hours per week.

**LGL 235 LEGAL ASPECTS OF BUSINESS ORGANIZATIONS (3 CR.)** Examines lawyer's role in the formation of business entities, including sole proprietorship, partnerships and corporations, and other business vehicles. Studies fundamental principles of law applicable to each and the preparation of the documents necessary for organization and operation. Lecture 3 hours per week.

**LGL 236 LEGAL CORPORATE LAW (3 CR.)** Studies fundamental principles of corporate law including capitalization, articles of incorporation, by-laws, tax returns, reports, financial statements and minutes, officers, employment contracts, and special problems. Lecture 3 hours per week.

**LGL 237 LAW OF INCOME TAXATION (4 CR.)** Studies the law of income taxation — state, federal and

local — including preparation of income tax returns and related materials. Surveys various administration and judicial tribunal and their jurisdiction involved in the determination of income tax controversies. Lecture 4 hours per week.

**LGL 238 BANKRUPTCY (3 CR.)** Provides a practical understanding of non bankruptcy alternatives and the laws of bankruptcy including Chapters 7, 11, 12 and 13 of the Bankruptcy Code. Emphasis will be placed on preparing petitions, schedules, statements and other forms. Lecture 3 hours per week.

## **MACHINE TECHNOLOGY (MAC)**

**MAC 131-132 MACHINE LAB I-II (2 CR.) (2 CR.)** Teaches fundamental machine shop operations, bench work, layout, measuring tools, and safety. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

**MAC 181 MACHINE BLUEPRINT READING I (3 CR.)** Introduces reading and interpreting blueprints and working drawings. Applies visualization of objects, sketching, and machine terminology. Lecture 3 hours per week.

**MAC 245 ADVANCED NUMERICAL CONTROL (2 CR.)** Applies the computer numerical control to machine tools, program writing setup and operation of milling machine and lathe. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

## **MARKETING (MKT)**

**MKT 100 PRINCIPLES OF MARKETING (3 CR.)** Presents principles, methods, and problems involved in the distribution and marketing of goods and services to industrial and ultimate consumers. Introduces various marketing middlemen: wholesaler, retailer, broker, agent including cooperative and trade associations, shippers, stores and facilitators. Discusses present-day problems and associations, shippers, stores, and facilitators. Discusses present-day problems and policies connected with distribution and sale of products, pricing, promotion, and buyer motivation. Examines variations of the marketing mix and market research, plus legal, social and ethical considerations in marketing. Lecture 3 hours per week.

**MKT 110 PRINCIPLES OF SELLING (3 CR.)** Presents fundamental aspects of personal selling, sales, ethics, and selling methods. Emphasizes professional sales techniques. Examines organization necessary for a well coordinated sales effort, including the training of sales personnel for maximum efficiency in selling and organization of the sales division within the business enterprise. Introduces sales management in planning, organizing, directing, and controlling the total sales effort. Lecture 3 hours per week.

**MKT 220 PRINCIPLES OF ADVERTISING (3 CR.)** Emphasizes the role of advertising in the marketing of goods and services. Discusses the different uses of advertising; types of media; how advertising is created; agency functions; and legal, social, and economic aspects of the industry. Introduces advertising display, copy and art work preparation, printing, and selection of media. Lecture 3 hours per week.

**MKT 248 TRANSPORTATION LAW (3 CR.)** Includes an in-depth history of transportation laws and regulations for the different modes of transportation.

Emphasizes recent legislation which led to deregulation and/or reregulation of various types of transportation carriers. Addresses current regulatory conditions and future changes. Lecture 3 hours per week.

**MKT 275 INTERNATIONAL MARKETING (3 CR.)** Examines the role of the multinational firm, as well as the environments in which they operate. Covers such factors as exchange rates, government foreign trade policy, and social-cultural factors. Compares international marketing planning with domestic market planning. Lecture 3 hours per week.

## **MATHEMATICS (MTH)**

**MTH 02 ARITHMETIC (3 CR.)** Covers arithmetic principles and computations including whole numbers, fractions, decimals, percents, measurement, graph interpretation, geometric forms, and applications. Develops the mathematical proficiency necessary for selected curriculum entrance. Credits not applicable towards graduation. Lecture 3 hours per week.

**MTH 03 ALGEBRA I (4 CR.)** Covers the topics of Algebra I including, real numbers, equations and equalities, exponents, polynomials, Cartesian coordinate system, rational expressions, and applications. Develops the mathematical proficiency necessary for selected curriculum entrance. Credits not applicable toward graduation. Prerequisites: Arithmetic or equivalent and a placement recommendation for MTH 03. Lecture 4 hours per week.

**MTH 04 ALGEBRA II (4 CR.)** Expands upon the topics of Algebra I including rational expressions, radicals and exponents, quadratic equations, systems of equations, and applications. Develops the mathematical proficiency necessary for selected curriculum entrance. Credits not applicable toward graduation. Prerequisites: Algebra I or equivalent and a placement recommendation for MTH 04. Lecture 4 hours per week.

**MTH 06 DEVELOPMENTAL GEOMETRY (3 CR.)** Covers topics in Euclidean geometry including similarity and congruency, plane and solid figures, right triangles, parallel and perpendicular lines, constructions, proofs, and applications. Develops the mathematical proficiency necessary for selected curriculum entrance. Credits not applicable toward graduation. Prerequisites: Algebra I or equivalent and a placement recommendation for MTH 06. Lecture 3 hours per week.

**MTH 103 APPLIED TECHNICAL MATHEMATICS I (3 CR.)** Presents a review of arithmetic, elements of algebra, geometry, and trigonometry. This portion of the sequence deals with algebraic skills. Directs applications to specialty areas. Prerequisites: Algebra I or equivalent and a placement recommendation for MTH 103. Lecture 3 hours per week.

**MTH 105 SURVEY OF TECHNICAL MATHEMATICS I (2 CR.)** Reviews arithmetic and introduces measurement, basic algebra, plane and solid geometry and its application to triangles. Prerequisites: Algebra or equivalent and a placement recommendation for MTH 105. Lecture 2 hours per week.

**MTH 113-114 ENGINEERING TECHNICAL MATHEMATICS I-II (5 CR.) (5 CR.)** Presents algebra, geometry, trigonometry, and an introduction to calculus. Includes solutions of linear and quadratic equations, trigonometric curve sketching, logarithms, ratio, proportions, variation, vectors, and the binomial theorem.

Prerequisites: Algebra I, Geometry, and Algebra II or equivalent and a placement recommendation for MTH 113. Lecture 5 hours per week.

**MTH 120 INTRODUCTION TO MATHEMATICS (3 CR.)** Introduces number systems, logic, basic algebra, and descriptive statistics. Intended for occupational/technical programs. Prerequisites: Algebra I or equivalent and a placement recommendation for MTH 120. Lecture 3 hours per week.

**MTH 126 MATHEMATICS FOR ALLIED HEALTH (2 CR.)** Presents scientific notation, precision and accuracy, decimals and percents, ratio and proportion, variation, simple equations, techniques of graphing, use of charts and tables, logarithms, and the metric system. Prerequisite: Algebra II and a placement recommendation for MTH 126. Lecture 2 hours per week.

**MTH 146 INTRODUCTION TO ELEMENTARY STATISTICS (3 CR.)** Introduces the methods of statistics including sampling from normally distributed populations, estimation, regression, testing of hypotheses, and point and interval estimation methods. Prerequisites: Algebra I or equivalent and a placement recommendation for MTH 146. Lecture 3 hours per week.

**MTH 151 MATHEMATICS FOR THE LIBERAL ARTS I (3 CR.)** Presents topics in sets, logic, numerations systems, geometric systems, and elementary computer concepts. Prerequisites: Algebra I, Algebra II and Geometry or equivalent and a placement recommendation for MTH 151. Lecture 3 hours per week.

**MTH 152 MATHEMATICS FOR THE LIBERAL ARTS II (3 CR.)** Presents topics in functions, combinatorics, probability, statistics and algebraic systems. Prerequisites: Algebra I, Algebra II and Geometry or equivalent and a placement recommendation for MTH 152. Lecture 3 hours per week.

**MTH 157 ELEMENTARY STATISTICS (3 CR.)** Presents elementary statistical methods and concepts including descriptive statistics, estimation, hypothesis testing, linear regression, and categorical data analysis. Credit will not be awarded for both MTH 157 and MTH 241. Prerequisites: Algebra I, Geometry, and Algebra II.

**MTH 163 PRE-CALCULUS I (3 CR.)** Presents college algebra, matrices, and algebraic, exponential, and logarithmic functions. Credit will not be awarded for both MTH 163 and MTH 166. Prerequisites: Algebra I, Algebra II, and Geometry or equivalent and a placement recommendation for MTH 163. Lecture 3 hours per week.

**MTH 166 PRE-CALCULUS WITH TRIGONOMETRY (5 CR.)** Presents college algebra, analytic geometry, trigonometry, and algebraic, exponential, and logarithmic functions. Credit will not be awarded for both MTH 163 and MTH 166. Prerequisites: Algebra I, Algebra II, and Geometry or equivalent and a placement recommendation for MTH 166. Lecture 5 hours per week.

**MTH 175 CALCULUS OF ONE VARIABLE I (3 CR.)** Presents differential calculus of one variable including the theory of limits, derivatives, differentials, antiderivatives and applications to algebraic and transcendental functions. Designed for mathematical, physical, and engineering science programs. Prerequisites: four units of high school mathematics

including Algebra I, Algebra II, Geometry and Trigonometry or equivalent and a placement recommendation for MTH 175. Lecture 3 hours per week.

**MTH 176 CALCULUS OF ONE VARIABLE II (3 CR.)** Continues the study of integral calculus of one variable including indefinite integral, definite integral and methods of integration with applications to algebraic and transcendental functions. Designed for mathematical, physical, and engineering science programs. Prerequisites: MTH 175 or equivalent. Lecture 3 hours per week.

**MTH 177 INTRODUCTORY LINEAR ALGEBRA (2 CR.)** Covers matrices, vector spaces, determinants, solutions of systems of linear equations, and eigenvalues. Designed for mathematical, physical, and engineering science programs. Corequisite: MTH 175 or equivalent. Lecture 2 hours per week.

**MTH 178 TOPICS IN ANALYTIC GEOMETRY (2 CR.)** Covers conic sections, polar and parametric graphing. Designed for mathematical, physical, and engineering science programs. Corequisite: MTH 176 or equivalent. Lecture 2 hours per week.

**MTH 213-214 ADVANCED ENGINEERING TECHNICAL MATHEMATICS I-II (3 CR.) (3 CR.)** Presents limits and differential and integral calculus with applications directed toward the appropriate technical field. Prerequisite: MTH 114 or equivalent. Lecture 3 hours per week.

**MTH 241 STATISTICS I (3 CR.)** Covers descriptive statistics, elementary probability, probability distributions, estimation, and hypothesis testing. Uses a computer package to solve case studies. Prerequisites: MTH 163 or MTH 166 or equivalent. Lecture 3 hours per week.

**MTH 242 STATISTICS (3 CR.)** Continues the study of estimation and hypothesis testing with emphasis on correlation and regression, analysis of variance, chi-square test, and non-parametric methods. Presents linear programming, network theory, project scheduling, and other quantitative applications. Uses a computer package to solve case studies. Prerequisites: MTH 241 or equivalent. Lecture 3 hours per week.

**MTH 271 APPLIED CALCULUS I (3 CR.)** Presents limits, continuity, differentiation of algebraic and transcendental functions with applications, and an introduction to integration. Prerequisite: MTH 163 or MTH 166 or equivalent. Lecture 3 hours per week.

**MTH 272 APPLIED CALCULUS II (3 CR.)** Covers techniques of integration, multivariable calculus, and an introduction to differential equations. Prerequisites: MTH 271 or equivalent. Lecture 3 hours per week.

**MTH 277 VECTOR CALCULUS (4 CR.)** Presents vector valued functions, partial derivatives, multiple integrals, infinite series, and topics from the calculus of vectors. Designed for mathematical, physical, and engineering science programs. Prerequisite: MTH 176, MTH 177, MTH 178 or equivalent. Lecture 4 hours per week.

**MTH 291 DIFFERENTIAL EQUATIONS (3 CR.)** Introduces first order differential equations, linear differential equations, numerical methods, and applications. Designed for mathematical, physical, and engineering science programs. Prerequisite: MTH 277 or equivalent. Lecture 3 hour per week.

## **MECHANICAL ENGINEERING TECHNOLOGY (MEC)**

**MEC 113 MATERIALS AND PROCESSES OF INDUSTRY (4 CR.)** Studies industrial/engineering materials and accompanying industrial processes. Investigates nature of materials structure and properties from a design standpoint, leading to a more intelligent selection of a material to fit the requirements of a part or product. Analyze the effects of the various processes on materials, as well as the processes themselves to ensure a logical and systematic procedure for selection of materials. Lecture 4 hours per week.

**MEC 118 AUTOMATED MANUFACTURING TECHNOLOGY (2 CR.)** Prerequisite: MAC 131, MEC 120 or equivalent. Studies numerical control systems. Includes application of numerical control to standard machine tools, numerical control systems, NC coordinate system, APT systems, two-dimensional machine process, three-dimensional machine process, flexible manufacturing role of robotics in automated manufacturing. Lecture 1 hours. Laboratory 3 hours. Total 4 hours per week.

**MEC 120 PRINCIPLES OF MACHINE TECHNOLOGY (3 CR.)** Studies fundamental machine operations and practices, including layout, measuring devices, hand tools, drilling, reaming, turning between centers, cutting tapers and threads, and milling; fabrication of mechanical parts on drill press, lathe, and mill. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**MEC 131 MECHANICS I - STATICS FOR ENGINEERING TECHNOLOGY (3 CR.)** Prerequisite: MTH 113 or equivalent. Teaches Newton's laws, resultants and equilibrium of force systems, trusses and frames, determination of centroids, and distributed loads and moments of inertia. Introduces dry friction and force systems in space. Lecture 3 hours per week.

**MEC 132 MECHANICS II - STRENGTH OF MATERIALS FOR ENGINEERING TECHNOLOGY (3 CR.)** Prerequisite: MEC 131. Teaches the concepts of stress and strain. Provides an analysis of stresses and deformations in loaded members, connectors, shafts, beams, columns, and combined stress. Lecture 3 hours per week.

**MEC 133 MECHANICS III - DYNAMICS FOR ENGINEERING TECHNOLOGY (2 CR.)** Prerequisite: MEC 132 or equivalent. Focuses on rigid body mechanics including kinetics, kinematics, and applications to machine elements. Lecture 2 hours per week.

**MEC 135 MECHANICS LABORATORY (1 CR.)** Analyzes tension, compression, torsion, bending, fatigue, impact strength, and hardness of materials. Addresses static and dynamic stresses and strains. Provides for statistical evaluation of data. Includes experiments and/or demonstrations. Laboratory 3 hours per week.

**MEC 162 APPLIED FLUID MECHANICS — HYDRAULICS/PNEUMATICS (3 CR.)** Introduces hydraulic and pneumatic systems found in construction equipment, road vehicles, and farm equipment. Includes the basic theory, construction, maintenance, and repair of hydraulic and pneumatic power systems. Lecture 3 hours per week.

**MEC 213-214 MACHINE DESIGN I-II (4 CR.) (4 CR.)** Prerequisite: MTH 113. Corequisite: MEC 132. Focuses on the analytical design of bearings, clutches, couplings, brake springs, gearing systems and power shafting. Emphasizes methods of constructing machine parts and specification of materials and manufacturing processes. Lecture 4 hours per week.

**MEC 256 THERMODYNAMICS (3 CR.)** Prerequisite: MTH 113. Introduces basic laws of thermodynamics and energy conversions. Analyzes energy, cycles, temperature, entropy, and enthalpy. Covers thermodynamic systems and processes. Lecture 3 hours per week.

## **MENTAL HEALTH (MEN)**

**MEN 100 INTRODUCTION TO MENTAL HEALTH (3 CR.)** Surveys history of mental health from ancient to contemporary times, with special emphasis on impact of the psychoanalytic, humanistic, and behavioral movements in the treatment of mental illness. Includes examination of structure and functions of human service delivery systems, knowledge and skills of mental health workers, and current ethical and legal issues. Lecture 3 hours per week.

**MEN 101-102 MENTAL HEALTH SKILL TRAINING I- (3 CR.) (3 CR.)** Departmental approval needed or student must be enrolled in Mental Health Program. Develops skills necessary to function as a mental health worker, with emphasis on guided practice in counseling skills as well as improved self-awareness. Includes training in problem solving, goal setting, and implementation of appropriate strategies and evaluation techniques relating to interaction involving a variety of client needs. Lecture 3 hours per week.

**MEN 221-222 GROUP PROCESS I-II (3 CR.) (3 CR.)** Prerequisite MEN 101-102. Departmental approval needed or student must be enrolled in Mental Health Program. Studies the stages of group development, role of the group leader, and contemporary models of group counseling utilized in mental health counseling. Includes experiential training in group leadership. Lecture 3 hours per week.

**MEN 225 COUNSELING THERAPY (3 CR.)** Studies various models of counseling theories and appropriate application of counseling techniques in the helping profession. Lecture 3 hours per week.

**MEN 245 PROBLEMS IN AGING (3 CR.)** Prerequisite MEN 101 or departmental approval. Examines the problems associated with aging including personality changes and reactions to internal and external stress. Covers specific intervention strategies that seek to rehabilitate and facilitate the adjustment of the aging client. Places emphasis on techniques for psychological problems associated with such factors as organic and general physical deterioration, metabolic disturbance, and social isolation. Lecture 3 hours per week.

**MEN 246 PROBLEMS IN ADOLESCENCE (3 CR.)** Prerequisite MEN 101 or departmental approval. Examines the problems associated with adolescence with an in-depth look at personality, environmental, and developmental factors. Covers specific intervention strategies with emphasis on theory, rationale, and techniques appropriate for this age group. Lecture 3 hours per week.

**MUSIC (MUS)****MUS 121-122 MUSIC APPRECIATION I-II (3 CR.)**

(3 CR.) Increases the variety and depth of the student's interest, knowledge, and involvement in music and related cultural activities. Acquaints the student with traditional and twentieth-century music literature, emphasizing the relationship music has as an art form with man and society. Increases the student's awareness of the composers and performers of all eras through listening and concert experiences. Lecture 3 hours per week.

**MUS 163-164 GUITAR THEORY AND PRACTICE I-II**

(3 CR.) (3 CR.) Studies the fundamentals of sound production, music theory, and harmony as they apply to guitar. Builds proficiency in both the techniques of playing the guitar and in the application of music fundamentals to these techniques. Presents different types of guitars and related instruments. Emphasizes music as entertainment and as a communication skill. Lecture 2 hours per week. Laboratory 3 hours. Total 5 hours per week.

**NATURAL SCIENCE (NAS)****NAS 131-132 ASTRONOMY I-II (4 CR.) (4 CR.)**

Studies the major and minor bodies of the solar system, stars and nebulae of the Milky Way, and extragalactic objects. Examines life and death of stars, origin of the universe, history of astronomy, and instruments and techniques of observation. Lecture 3 hours per week. 3 hours per week. Total 6 hours per week.

**NAS 185 MICROBIOLOGY (4 CR.)** Prerequisite: High school biology or BIO 101. Surveys microorganisms, presenting their characteristics and activities as related to health and disease. Lecture 3 hours per week. Laboratory 2 hours per week. Total 5 hours per week.

**NURSING (NUR)**

**NUR 25 NURSING ASSISTANT (3 CR.)** Teaches fundamentals of patient care with laboratory experience in foods and fluids; elimination; moving patients; morning, afternoon and evening care; care of hospital equipment; means of providing special comforts and safety; and admission and discharge procedures. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**NUR 27 GERIATRIC NURSE AIDE (4 CR.)** Teaches care of older patients with emphasis on the social, emotional, and spiritual needs of geriatric patients; procedures; communication and interpersonal relations; observation, charting and reporting; safety and infection control; anatomy and physiology; personal care, nutrition and patient feeding; death and dying. Lecture 2 hours. Clinical 5 hours. Total 7 hours per week.

**NUR 37 HOSPITAL AND HOME HEALTH CARE (4 CR.)** Prerequisite: NUR 25. Emphasizes caring for adult patients in hospital and home settings. Includes personal care, psychological needs, infection control, safety, nutrition, anatomy & physiology, infection control, disease processes, communication and documentation skills, and death and dying. Lecture 2 hours. Clinical 4 hours. Total 6 hours per week.

**NUR 70 REENTRY INTO NURSING (6 CR.)** Facilitates the return of the inactive nurse to the work force. Teaches

current nursing practice and updates skills. Lecture 3 hours. Clinical 9 hours. Total 12 hours per week.

**NUR 95 - TOPICS IN NURSING (1 CR.)** Focuses on the nurse aide's responsibilities regarding professional ethics and relationships with patient, patient's family, supervisors, and peers in a health-care setting. Role play and written activities. Lecture 1 hour per week.

**NUR 111 NURSING I (10 CR.)** Corequisite: BIO 141. Introduces nursing principles, concepts, and the nursing process. Develops nursing skills to meet the biopsychosocial needs of individuals. Includes math computational skills and basic computer instruction related to the delivery of nursing care. Provides supervised learning experiences in college nursing laboratory and/or cooperating agencies. Lecture 7 hours. Laboratory 3 hours. Clinic 6 hours per week. Total 16 hours per week.

**NUR 112 NURSING II (10 CR.)** Prerequisites: NUR 111. Corequisite: NAS 185. Focuses on the nursing care of individuals and/or families experiencing changes along the health/illness continuum that are common, well-defined, and have predictable outcomes. Provides supervised learning experiences in college nursing laboratory and/or cooperating agencies. Lecture 6 hours. Clinic 12 hours per week. Total 18 hours per week.

**NUR 135 DRUG DOSAGE CALCULATIONS (2 CR.)** Teaches apothecary, metric, household conversion; reading of drug orders and labels. Provides a practical approach to learning to prepare dosages and solutions, including calculating intravenous flow rates and pediatric drugs. Lecture 2 hours per week.

**NUR 211-212 NURSING III-IV (10 CR.) (10 CR.)** Prerequisites for NUR 211: NUR 112, NAS 185, BIO 141, BIO 142. Corequisite for NUR 211: PSY 201. Prerequisites for NUR 212: NUR 211 and PSY 201. Corequisite for NUR 212: PSY 215. Emphasizes the nursing area of individuals/families in various stages of development experiencing problems related to their biopsychosocial needs. Uses all components of the nursing process with increasing degrees of skill. Provides supervised learning experiences in college nursing laboratory and/or cooperating agencies. Lecture 6 hours. Clinic 12 hours per week. Total 18 hours per week.

**NUR 290 - COORDINATED PRACTICE (1 CR.)** Provides clinical experience in acute care setting. Hospital experience. Clinical 2 hours per week.

**OFFICE SYSTEMS TECHNOLOGY (OFT)**

**OFT 105 PERSONAL KEYBOARDING (2 CR.)** Teaches correct techniques for touch keyboarding. Prepares students for courses requiring familiarity with keyboard for computer or typewriter usage. Lecture 2 hours per week.

**OFT 106 BUSINESS ENGLISH SKILLS REVIEW (1-3 CR.)** Provides the opportunity to review business English skills such as grammar, punctuation, letter writing, and other selected business English topics based on individual needs. Variable hours per week.

**OFT 107 EDITING/PROOFREADING SKILLS (3 CR.)** Develops skills essential to creating and editing business documents. Covers spelling, diction, and punctuation, word division, capitalization, and sentence structure. Lecture 3 hours per week.

**OFT 110 KEYBOARDING/TYPEWRITING - SKILLBUILDING (3-5 CR.)** Prerequisite: OFT 111 or OFT 115. Emphasizes speed and accuracy to attain skills for job employment and job promotion. Variable lecture/laboratory hours per week.

**OFT 111 KEYBOARDING/TYPEWRITING I (3-5 CR.)** Introduces the keyboard with emphasis on good techniques, machine mastery, letter formats and styles, tabulations, centering, and reports. Variable lecture/laboratory hours per week.

**OFT 112 KEYBOARDING/TYPEWRITING II (3-5 CR.)** Prerequisite OFT 111. Continues skill building through production typing with emphasis on employment competencies. Variable lecture/laboratory hours per week.

**OFT 115 KEYBOARDING FOR INFORMATION PROCESSING (3-5 CR.)** Develops keyboarding proficiency with a variety of keyboards found on electronic text-data entry devices. Includes instruction in general business and office formats. Variable hours per week.

**OFT 121 SHORTHAND I (3-5 CR.)** Focuses on shorthand theory, reading and writing skills, development of general business vocabularies, word usage, and general business dictation. Variable hours per week.

**OFT 122 SHORTHAND II (3-5 CR.)** Prerequisite: OFT 121. Develops speed in typical business dictation, with emphasis on transcription accuracy from shorthand notes. Variable hours per week.

**OFT 205 BUSINESS COMMUNICATIONS (3 CR.)** Teaches techniques of oral and written communications. Emphasizes writing and presenting business-related materials. Lecture 3 hours per week.

**OFT 215 EXECUTIVE KEYBOARDING/TYPEWRITING (3-5 CR.)** Prerequisite: OFT 112. Develops decision-making skills, and speed and accuracy in production typing on various equipment. Emphasizes employment standards. Variable hours per week.

**OFT 216 WORD PROCESSING EQUIPMENT OPERATION (3-5 CR.)** Prerequisite OFT 111. Teaches use and operation of word/information processing equipment. Incorporates specific advanced applications. Variable hours per week.

**OFT 221 ADVANCED SHORTHAND AND TRANSCRIPTION I (3-5 CR.)** Prerequisite: OFT 122. Reviews principles of shorthand, develops vocabulary and phrasing techniques, and builds speed of general business dictation and transcription skills. Variable hours per week.

**OFT 235 SPECIALIZED SOFTWARE APPLICATIONS (PAGEMAKER) (3-4 CR.)** Prerequisite: OFT 216 or equivalent. Teaches specialized integrated software applications on the microcomputer. Emphasizes document production to meet business and industry standards. Lecture 3-4 hours per week.

**OFT 236 WORD PROCESSING OPERATION AND SYSTEM OPERATION (3-5 CR.)** Prerequisite OFT 216. Focuses on advanced applications and use of word/information processing equipment. Teaches system supervision and operation. Variable hours per week.

**OFT 241-242 MACHINE TRANSCRIPTION I-II (3-5 CR.) (3-5 CR.)** Prerequisite: OFT 112. Teaches efficient operation of transcribing equipment, listening and

dictating techniques and business formats, grammar. Also, covers punctuation, and business English usage. Emphasizes production rates of mailable copy. Variable hours per week.

**OFT 245 MEDICAL MACHINE TRANSCRIPTION (3-5 CR.)** Prerequisite OFT 112. Develops machine transcription skills, integrating operation of transcribing equipment with understanding of medical terminology. Emphasizes dictation techniques and accurate transcription of medical documents in prescribed formats. Variable hours per week.

**OFT 246 LEGAL MACHINE TRANSCRIPTION (3-5 CR.)** Prerequisite OFT 112. Develops machine transcription skill, integrating operation of transcribing equipment with understanding of legal terminology. Emphasizes dictation techniques and accurate transcription of legal documents in prescribed formats. Variable hours per week.

**OFT 251-252 OFFICE SYSTEMS AND PROCEDURES (3 CR.) (3 CR.)** Prerequisite OFT 112. Teaches office protocol, solutions to office problems, managerial functions, and other topics associated with office technology. Lecture 3 hours per week.

**OFT 261-262 LEGAL OFFICE PROCEDURES I-II (3 CR.) (3 CR.)** Prerequisite OFT 112 or divisional approval. Teaches topics associated with procedures used in law offices and courts. Lecture 3 hours per week.

## **PHILOSOPHY (PHI)**

**PHI 101-102 INTRODUCTION TO PHILOSOPHY I-II (3 CR.) (3 CR.)** Introduces a broad spectrum of philosophical problems and perspectives with an emphasis on the systematic questioning of basic assumptions about meaning, knowledge, reality, and values. Lecture 3 hours per week.

**PHI 231-232 THANATOLOGY: DIMENSIONS OF DEATH AND DYING I-II (3 CR.) (3 CR.)** Surveys attempts to understand the meaning of death and of ways of handling personal and social implications. Examines dying and death from a variety of perspectives, including psychological, sociological, cultural, and religious views. Lecture 3 hours per week.

## **PHOTOGRAPHY (PHT)**

**PHT 100 INTRODUCTION TO PHOTOGRAPHY (2 CR.)** Introduces principles of photography with outside shooting assignments related to lecture topics. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

**PHT 101-102 PHOTOGRAPHY I-II (3 CR.) (3 CR.)** Teaches principles of photography and fundamental camera techniques. Requires outside shooting and lab work. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

**PHT 107 NATURE PHOTOGRAPHY (3 CR.)** Teaches fundamentals of 35mm color slide photography of natural objects. Emphasizes selection of equipment and film, compositional theory, and the flash-photography formula. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**PHT 246 ADVANCED PHOTOGRAPHIC PRINTING (3 CR.)** Examines advanced printing techniques and principles of archival processing and presentation. Emphasizes development of individual printing style.

Requires a portfolio of high quality prints on subject of choice. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

## **PHYSICAL EDUCATION AND RECREATION (PED)**

**PED 103-104 AEROBIC FITNESS I-II (1-2 CR.) (1-2 CR.)** Develops cardiovascular fitness through activities designed to elevate and sustain heart rates appropriate to age and physical condition. Variable hours per week.

**PED 105-106 AEROBIC DANCE I-II (1-2 CR.) (1-2 CR.)** Focuses on physical fitness through dance exercises. Emphasizes the development of cardiovascular endurance, muscular endurance, and flexibility. Variable hours per week.

**PED 123-124 TENNIS I-II (1-2 CR.) (1-2 CR.)** Teaches tennis skills with emphasis on stroke development and strategies for individual and team play. Includes rules, scoring, terminology, and etiquette. Variable hours per week.

**PED 135-136 BOWLING I-II (1-2 CR.) (1-2 CR.)** Teaches basic bowling skills and techniques, scoring, rules, etiquette, and terminology. Variable hours per week.

**PED 140 WATER AEROBICS (1-2 CR.)** Focuses on cardiovascular endurance, muscular endurance, and flexibility using water resistance. Includes the principles and techniques of aerobic exercise. Variable hours per week.

**PED 141-142 SWIMMING I-II (1-2 CR.)** Introduces skills and methods of swimming strokes. Focuses on safety and physical conditioning. Variable hours per week.

**PED 152 BASKETBALL (1-2 CR.)** Introduces basketball skills, techniques, rules, and strategies. Variable hours per week.

**PED 154 VOLLEYBALL (1-2 CR.)** Introduces skills, techniques, strategies, rules, and scoring. Variable hours per week.

**PED 156 SOFTBALL (1-2 CR.)** Emphasizes skills, techniques, strategies, rules. Variable hours per week.

**PED 181-182 DOWNHILL SKIING I-II (1-2 CR.) (1-2 CR.)** Teaches basic skills of downhill skiing; selection and use of equipment; terminology and safety rules. Includes field experience. Variable hours per week.

## **PHYSICS (PHY)**

**PHY 201-202 GENERAL COLLEGE PHYSICS I-II (4 CR.) (4 CR.)** Prerequisites: MTH 113 or MTH 163 or equivalent. A non-calculus introductory college physics sequence. Includes fundamental principles of physics. Covers mechanics, thermodynamics, wave phenomena, electricity, magnetism, and selected topics in modern physics. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**PHY 221-222 ENGINEERING PHYSICS I-II (3 CR.) (3CR.)** Prerequisite: MTH 176 AND MTH 178 or one year of college calculus. Teaches principles of classical and modern physics. Includes mechanics, wave phenomena, heat, electricity, magnetism, relativity, and nuclear physics. Lecture 3 hours per week.

**PHY 241-242 UNIVERSITY PHYSICS I-II (4 CR.) (4 CR.)** Prerequisite: MTH 176 AND MTH 178 or one

year of college calculus. An introductory calculus-based physics sequence recommended for engineering, physics, computer science, and mathematics majors. Teaches principles of classical and modern physics. Includes mechanics, wave phenomena, electricity, magnetism, and relativity. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

## **POLITICAL SCIENCE (PLS)**

**PLS 130 BASICS OF AMERICAN POLITICS (3 CR.)** Teaches basics of the operations of Congress, the presidency, and the federal court system. Includes civil liberties, citizenship, elections, political parties, and interest groups. Lecture 3 hours per week.

**PLS 135 AMERICAN NATIONAL POLITICS (3 CR.)** Teaches political institutions and processes of the national government of the United States, focuses on the Congress, presidency, and the courts, and on their inter-relationships. Gives attention to public opinion, suffrage, elections, political parties, interest groups, civil rights, domestic policy, and foreign relations. Lecture 3 hours per week.

**PLS 211-212 U.S. GOVERNMENT I-II (3 CR.) (3 CR.)** Teaches structure, operation, and process of national, state, and local governments. Includes in-depth study of the three branches of the government and of public policy. Lecture 3 hours per week.

**PLS 241 INTERNATIONAL RELATIONS I (3 CR.)** Teaches geographic, demographic, economic, ideological, and other factors conditioning the policies of countries and discusses conflicts and their adjustment. Lecture 3 hours per week.

**PLS 242 INTERNATIONAL RELATIONS II (3 CR.)** Teaches foreign policies of the major powers in the world community with an emphasis on the role of the United States in international politics. Lecture 3 hours per week.

## **PSYCHOLOGY (PSY)**

**PSY 120 HUMAN RELATIONS (3 CR.)** Introduces the theory and practice of effective human relations. Increases understanding of self and others and interpersonal skills needed to be a competent and cooperative communicator. Lecture 3 hours per week.

**PSY 126 PSYCHOLOGY FOR BUSINESS AND INDUSTRY (3 CR.)** Focuses on the application of psychology to interpersonal relations and the working environment. Includes topics such as group dynamics, motivation, employee-employer relationship, interpersonal communications, and techniques for selection and supervision of personnel. Lecture 3 hours per week.

**PSY 201-202 INTRODUCTION TO PSYCHOLOGY I-II (3 CR.) (3 CR.)** Examines human and animal behavior, relating experimental studies to practical problems. Includes topics such as sensation/perception, learning, memory, motivation, emotion, stress, development, intelligence, personality, psychopathology, therapy, and social psychology. Lecture 3 hours per week.

**PSY 207 PSYCHOLOGY OF ASSERTIVENESS (3 CR.)** Describes the principles and techniques of assertive behavior and their application to daily life. Provides opportunity to practice skills for effective communications and conflict resolution. Lecture 3 hours per week.



**PSY 215 ABNORMAL PSYCHOLOGY (3 CR.)**

Prerequisite PSY 201. Explores historical views and current perspectives of abnormal behavior. Emphasizes major diagnostic categories and criteria, individual and social factors of maladaptive behavior, and types of therapy. Includes methods of clinical assessment and research strategies. Lecture 3 hours per week.

**PSY 220 INTRODUCTION TO BEHAVIOR**

**MODIFICATION (3 CR.)** Studies the history of behaviorism and the principles and applications of behavior modification. Emphasizes observation and application of behavior modification principles. Lecture 3 hours per week.

**PSY 231-232 LIFE SPAN HUMAN DEVELOPMENT I-II**

**(3 CR.) (3 CR.)** Investigates human behavior through the life cycle. Describes physical, cognitive, and psycho-social aspects of human development from conception to death. Lecture 3 hours per week.

**PSY 235 CHILD PSYCHOLOGY (3 CR.)**

Studies development of the child from conception to adolescence. Investigates physical, intellectual, social and emotional factors involved in the child's growth. Lecture 3 hours per week.

**PSY 271-272 INTRODUCTION TO**

**PARAPSYCHOLOGY I-II (3 CR.) (3 CR.)** Presents the history of psychic phenomena from ancient to modern times and discusses man's attempt to understand and explain such phenomena. Reviews modern parapsychological research discoveries, and examines perspectives of natural sciences, social sciences and arts. Includes classroom experiments and demonstrations. Lecture 3 hours per week.

**PSY 273-274 SELECTED TOPICS IN**

**PARAPSYCHOLOGY (3 CR.) (3 CR.)** Affords opportunity for in-depth study of selected topics in parapsychology. Offers experimental and theoretical guided research projects. Lecture 3 hours per week.

**RADIO AND TELEVISION (RTV)****RTV 121-122 ADVANCED SERVICING AND TROUBLE-SHOOTING TECHNIQUES I-II (5 CR.)**

**(5 CR.)** Prerequisite RTV 124 or equivalent. Discusses electronic circuitry used in television, audio, and computer systems. Emphasizes developing ability to repair electronic equipment using the television receiver as instructional tool. Lecture 3 hours. Laboratory 6 hours. Total 9 hours per week.

**RTV 124 TV ELECTRONICS (4 CR.)** Includes methods of functional analysis and repair of basic receiver systems. Introduces electronic communications. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**RADIOGRAPHY (RAD)****RAD 106 INTRODUCTION TO RADIOLOGIC**

**SCIENCE (2 CR.)** Presents an overview of radiographic imaging techniques, basic equipment, and elements of film processing. Basic technical factors of image production and radiographic quality are stressed. Lecture 2 hours per week.

**RAD 111-112 RADIOLOGIC SCIENCE I-II (4 CR.)**

**(4 CR.)** Teaches concepts of radiation, radiography physics, fundamentals of electromagnetic radiation, electricity and magnetism, and application of these principles to radiography. Focuses on X-ray production,

emission, and X-ray interaction with matter. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**RAD 121 RADIOGRAPHIC PROCEDURES I (4 CR.)**

Introduces procedures for positioning the patient's anatomical structures relative to X-ray beam and image receptor. Emphasizes procedures for routine examination of the chest, abdomen, extremities, and axial skeleton. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**RAD 131-132 ELEMENTARY CLINICAL**

**PROCEDURES I-II (3 CR.) (3 CR.)** Develops technical skills in fundamental radiographic procedures. Focuses on introduction to radiography, basic radiation safety, manipulation of equipment, patient care, osseous studies, and some contrast studies. Provides clinical experience in cooperating health agencies. Clinical 15 hours per week.

**RAD 190 COORDINATED PRACTICE (4 CR.)**

Prerequisite: RAD 132. Introduces advanced technical skills in fundamental radiographic procedures. Focuses on basic contrast media studies, osseous studies, and skull procedures. Provides clinical experiences in health care agencies. Clinical 16 hours per week.

**RAD 205 RADIATION PROTECTION AND**

**RADIOBIOLOGY (3 CR.)** Studies methods and devices used for protection from ionizing radiation. Teaches theories of biological effects, cell and organism sensitivity, and the somatic and genetic effects of ionizing radiation. Presents current radiation protection philosophy for protecting the patient and technologist. Lecture 3 hours per week.

**RAD 215 CORRELATED RADIOGRAPHIC THEOR**

**(2 CR.)** Presents intensive correlation of all major radiologic technology subject areas. Studies interrelationships of biology, physics, principles of exposure, radiologic procedures, patient care, and radiation protection. Lecture 2 hours per week.

**RAD 221 RADIOGRAPHIC PROCEDURES II (4 CR.)**

Continues procedures for positioning the patient's anatomical structures relative to X-ray beam and image receptor. Emphasizes procedures for routine examination of the skull, contrast studies of internal organs, and special procedures employed in the more complicated investigation of the human body. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**RAD 225 SPECIALIZED PATIENT CARE**

**PROCEDURES (2 CR.)** Focuses on specific nursing procedures associated with routine and emergency conditions encountered in the performance of radiographic examinations. Teaches medication preparation and administration principles. Lecture 2 hours per week.

**RAD 231-232 ADVANCED CLINICAL PROCEDURES**

**I-II (5 CR.) (5 CR.)** Reinforces technical skills in fundamental radiographic procedures. Introduces more intricate contrast media procedures. Focuses on technical proficiency, application of radiation, protection, nursing skills, and exposure principles. Teaches advanced technical procedures and principles of imaging modalities, correlating previous radiographic theory, focusing on full responsibility for patients in technical areas, perfecting technical skills, and developing awareness of related areas utilizing ionizing radiation. Provides clinical experience in cooperating health agencies. Clinical 25 hours per week.

**RAD 240 RADIOGRAPHIC PATHOLOGY (3 CR.)**

Presents a survey of common medical and surgical disorders that affect radiographic image. Discusses conditions related to different systems of the human body. Studies the correlation of these conditions with radiographs. Lecture 3 hours per week.

**RAD 290 COORDINATED INTERNSHIP (7 CR.)**

Prerequisite: RAD 232. Provides additional experience in radiographic procedures, demonstrating skills in technical proficiency, patient care procedures, radiation protection, and evaluation of experience in cooperating health agencies. Clinical 21 hours per week.

**RAD 295 - TOPICS IN RADIOGRAPHY (1 CR.)**

Seminar on advancements in radiographic imaging methods. New techniques and other topics of interest to the advanced student will be emphasized. Lecture 1 hour per week.

**RAILROAD OPERATIONS (RRO)****Pending program approval**

**RRO XXX HISTORY OF RAILROADING (3 CR.)** This course covers the history and traditions of railroading and the industry's role in North American economic development. Upon successful completion of this course, the student should be able to list and explain the significance of major events in North American railroading. Lecture 3 hours per week.

**RRO XXX RAILROADING TECHNICAL CAREERS**

**(3 CR.)** This course includes information about technical careers in railroading enabling students to choose suitable career paths. This course includes field trips which will demonstrate the relationships among technical work groups in day-to-day railroad operations. Upon successful completion of this course, the student should be able to describe basic technical job functions, requirements and characteristics. Lecture 3 hours per week.

**RRO XXX RAILROAD OPERATIONS (3 CR.)**

This course includes information about the industry, its major assets, its structure, and typical operations. Upon successful completion of this course, the student should be able to define the current North American railroading industry characteristics, basic operations components, and processes, and industry structure and administrative processes. Lecture 3 hours per week.

**RRO XXX RAILROAD, SAFETY, QUALITY &**

**ENVIRONMENT (3 CR.)** This course covers the importance of safety, quality, personal health, and environmental awareness to the railroad industry and emphasizes the basic tools and techniques for improving these conditions on the job. Upon successful completion of this course, the student should be able to define and explain the needs for improved safety, quality, health, and environmental awareness, describe their basic principles, explain the elements of successful programs, and apply these elements to typical tasks on the job. Lecture 3 hours per week.

**REAL ESTATE (REA)****REA 100 PRINCIPLES OF REAL ESTATE (4 CR.)**

Examines practical applications of real estate principles. Includes a study of titles, estates, land descriptions, contracts legal instruments, financing, and management of real estate. Lecture 4 hours per week.

**REA 215 REAL ESTATE BROKERAGE (3 CR.)**

Prerequisite: REA 100. Considers administrative principles and practices of real estate brokerage, financial control, and marketing of real property. Lecture 3 hours per week.

**REA 216 REAL ESTATE APPRAISAL (3 CR.)**

Prerequisite: REA 100. Explores fundamentals of real estate evaluation: methods used in determining value; application of the valuation process, and the principal techniques by simulations, working problems, and reviewing actual appraisals. Includes the opportunities available in the appraisal field. Lecture 3 hours per week.

**REA 217 REAL ESTATE FINANCE (3 CR.)**

Prerequisite: REA 100. Presents principles and practices of financing real estate sales and properties. Analyzes various types of mortgage payments and contracts, financing of homes and industrial properties and building, loan applications, relationship between correspondent and investor, construction loans. Lecture 3 hours per week.

**REA 245 REAL ESTATE LAW (3 CR.)**

Prerequisite: REA 100. Studies real estate law, including rights incidental to property ownership and management, agency contract and application to real estate transfer covenanting probate proceedings, trust transactions, and tax implications. Lecture 3 hours per week.

**REA 246 REAL ESTATE ECONOMICS (3 CR.)**

Examines the nature and classification of land economics, the development of property, construction and subdivision, economic values and real estate evaluation, real estate cycles and business fluctuations, residential market trends, rural property, and special purpose property trends. Lecture 3 hours per week.

**REA 247 REAL ESTATE INVESTMENTS (3 CR.)**

Focuses on estate investments with emphasis on taxation, limited partnerships, syndications, exchanges and modern techniques of mortgage equity requirements and depreciation guidelines. Lecture 3 hours per week.

**REA 256 LAND PLANNING AND USE (3 CR.)**

Presents land value and use, planning, zoning regulations, building and site requirements, sanitation and utilities, highest and best use concept, population analysis, influence of market forces, and public policies. Lecture 3 hours per week.

**RELIGION (REL)****REL 200 SURVEY OF THE OLD TESTAMENT (3 CR.)**

Surveys books of the Old Testament, with emphasis on prophetic historical books. Examines the historical and geographical setting and place of the Israelites in the ancient Middle East as background to the writings. Lecture 3 hours per week.

**REL 210 SURVEY OF THE NEW TESTAMENT (3 CR.)**

Surveys books of the New Testament, with special attention upon placing the writings within their historical and geographical setting. Lecture 3 hours per week.

**REL 230 RELIGIONS OF THE WORLD (3 CR.)**

Introduces the religions of the world with attention to origin, history, and doctrine. Lecture 3 hours per week.

**SAFETY (SAF)****SAF 120 SAFETY & HEALTH STANDARDS:**

**REGULATIONS AND CODES (3 CR.)** Teaches development of safety standards, the Occupational

Safety and Health Act (OSHA), its rules and regulations; penalties for non-compliance, and methods of compliance. Includes an examination of Government Regulatory Codes and appraisal of consensus, advisory, and proprietary standards. Lecture 3 hours per week.

**SAF 126 PRINCIPLES OF INDUSTRIAL SAFETY (3 CR.)** Teaches principles and practices of accident prevention, analysis of accident causes, mechanical safeguards, fire prevention, housekeeping, occupational diseases, first aid, safety organization, protection equipment and general safety principles and promotion. Lecture 3 hours per week.

**SAF 127 INDUSTRIAL SAFETY (2 CR.)** Provides basic understanding of safety and health in an industrial situation. Includes hazardous materials, substances, conditions, activities, and habits as well as the prescribed methods and equipment needed for the apprentice to protect himself and others. Lecture 2 hours per week.

**SAF 131 MATERIALS HANDLING, MACHINERY, HANDTOOLS & CONTROL I (3 CR.)** Examines physical hazards of environment including power sources, methods of control, hazards, storage and materials handling. Examines general safety rules regarding the use of handtools, portable power tools, and machine tools; maintenance, repair and inspection programs to be established, and personal protective equipment to be utilized. Lecture 3 hours per week.

**SAF 140 INTRODUCTION TO INDUSTRIAL HYGIENE (3 CR.)** Studies environmental energy, physical and chemical hazards, including gases, vapors, dusts, fumes, and mists; the importance of personal protective equipment, and contamination control methodology. Lecture 3 hours per week.

**SAF 215 INDUSTRIAL SOUND AND NOISE (3 CR.)** Prerequisite HLT 146. Studies the physics of noise, the physiology of hearing and the impact upon the worker of noise in the occupational environment. Includes sound level measurement, analysis principles of audiometry, hearing protection and noise control techniques. Lectures 2 hours. Laboratory 2 hours. Total 4 hours per week.

**SAF 225 OCCUPATIONAL SAFETY ENGINEERING TECHNIQUES (3 CR.)** Teaches practical safety approach to the methods used for recognition of potentially hazardous situation in the work environment and measures used to correct such situation. Discusses techniques of systems' safety concepts and concepts of industrial engineering applicable to an analysis of safe work procedures. Lecture 3 hours per week.

## **SIGN COMMUNICATIONS (SCM)**

**SCM 100 INTRODUCTION TO AMERICAN SIGN LANGUAGE (3 CR.)** Teaches the fundamentals of finger-spelling, American sign language structure, and sign language vocabulary. Develops skills for communication with the hearing impaired. Introduces the non-language aspects of communications, including eye movement, facial expression, and body posture. Explores and develops skills in gesture pantomime and body language. Lecture 3 hours per week.

**SCM 105 ORIENTATION TO DEAFNESS (3 CR.)** Studies the ear mechanism, hearing losses, and causes of deafness. Provides an overview of the deaf community and hearing impaired consumers. Includes

study of treatment and education of hearing impaired. Lecture 3 hour per week.

**SCM 110 INTERMEDIATE AMERICAN SIGN LANGUAGE (3 CR.)** Prerequisite SCM 100 or consent of the instructor. Provides students with additional American sign language vocabulary. Teaches idiomatic expressions, colloquialisms, and receptive skills. Lecture 3 hours per week.

**SCM 115 EXPRESSIVE AND RECEPTIVE FINGERSPELLING (2 CR.)** Provides extensive practice of speed, accuracy, and clarity in sending and receiving fingerspelling. Focuses on increasing skills, including English vocabulary, spelling, and letter production. Lecture 2 hours per week.

**SCM 200 ADVANCED AMERICAN SIGN LANGUAGE (3 CR.)** Provides student with additional American Sign Language vocabulary. Emphasizes linguistic aspects of ASL, including classifiers, syntax, locatives, placement, and sentence types. Develops skill in expressive/receptive use of language. Prerequisite SCM 110 or consent of the instructor. Lecture 3 hours per week.

**SCM 211-212 EXPRESSIVE INTERPRETING I-II (3 CR.) (3 CR.)** Develops skills in voice-to-sign interpreting. Provides feedback in sign production, appropriate sign selection, facial expression, body movements, and time lag. Prerequisite SCM 110. Lecture 2 hours per week. Laboratory 2 hours per week.

**SCM 231-232 SIGN-TO-VOICE INTERPRETING I-II (3 CR.) (3 CR.)** Provides skill development in reading sign language and interpreting from sign-to-voice through feedback. Focuses on developing speed and accuracy through extensive practice. Emphasizes correct grammatical English and voice intonation. Corequisite SCM 110. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

## **SOCIOLOGY (SOC)**

**SOC 201-202 INTRODUCTION TO SOCIOLOGY I-II (3 CR.) (3 CR.)** Introduces basic concepts and methods of sociology. Presents significant research and theory in areas such as socialization, group dynamics, gender roles, minority group relations, stratification, deviance, culture, community studies. Includes education, religion, political system, and economic system. Lecture 3 hours per week.

**SOC 208 SOCIOLOGY OF POPULAR CULTURES (3 CR.)** Focuses on historical and contemporary currents of social life. Includes nature of social trends, relationship between social trends and individual behavior, and reflection of cultural trends in the mass media. Lecture 3 hours per week.

**SOC 211-212 PRINCIPLES OF ANTHROPOLOGY (3 CR.) (3 CR.)** Inquires into the origins, development, and diversification of human biology and human cultures. Includes fossil records, physical origins of human development, human population genetics, linguistics, cultures' origins and variation, and historical and contemporary analysis of human societies. Lecture 3 hours per week.

**SOC 215 SOCIOLOGY OF THE FAMILY (3 CR.)** Studies topics such as marriage and family in social and cultural context. Addresses the single scene, dating and marriage styles, child-rearing, husband and wife

interaction, single-parent families, alternative lifestyles. Lecture 3 hours per week.

**SOC 268 SOCIAL PROBLEMS (3 CR.)** Applies sociological concepts and methods to analysis of current social problems. Includes delinquency and crime, mental illness, drug addiction, alcoholism, sexual behavior, population crisis, race relations, family and community disorganization, poverty, automation, wars, and disarmament. Lecture 3 hours per week.

## **SPANISH (SPA)**

**SPA 101-102 BEGINNING SPANISH I-II (4 CR.) (4 CR.)** Introduces understanding, speaking, reading, and writing skills and emphasizes basic Spanish sentence structure. Lecture 4 hours per week.

**SPA 201-202 INTERMEDIATE SPANISH I-II (4 CR.) (4 CR.)** Prerequisite SPA 102 or equivalent. Continues to develop understanding, speaking, reading, and writing skills. May include oral drill and practice. Lecture 4 hours per week.

## **SPEECH AND DRAMA (SPD)**

**SPD 100 PRINCIPLES OF PUBLIC SPEAKING (3 CR.)** Applies theory and principles of public address with emphasis on preparation and delivery. Lecture 3 hours per week.

**SPD 105 ORAL COMMUNICATION (3 CR.)** Studies effective communication with emphasis on speaking and listening. Lecture 3 hours per week.

**SPD 136 THEATER WORKSHOP (1-6 CR.)** Enables students to work in various activities of play production. The student participates in performance, set design, stage carpentry, sound, costuming, lighting, stage managing, props, promotion, or stage crew. May be repeated for credit. Variable hours per week.

**SPD 151-152 FILM APPRECIATION I-II (3 CR.) (3 CR.)** Aims to increase the student's knowledge and enjoyment of film and film criticism through discussion and viewing of movies. Lecture 3 hours per week.

**SPD 250 THE ART OF THE FILM (3 CR.)** Introduces the art of the film through a survey of film history; includes viewing, discussion, and analysis of selected films. Studies film techniques such as composition, shot sequence, lighting, visual symbolism, sound effects, and editing. Lecture 3 hours per week.

## **STUDENT DEVELOPMENT (STD)**

**STD 100 ORIENTATION (1 CR.)** Assists students in transition to college. Provides overviews of college policies, procedures, curricular offerings. Encourages contacts with other students and staff. Assists students toward college success through information regarding effective study habits, career and academic planning, and other college resources available to students. May include English and math placement testing. Strongly recommended for beginning students. Required for graduation. Lecture 1 hour per week.

**STD 104 STUDY SKILLS (1-3 CR.)** Assists students in planning strategies to overcome nonproductive study habits and in implementing positive study behaviors. Includes management, memory improvement, note-taking, and test-taking. Lecture 1-3 hours per week.

**STD 105 PERSONAL DEVELOPMENT FROM A WOMAN'S PERSPECTIVE (1-2 CR.)** Addresses the psychological and educational adjustment needs of the female college student. Covers three segments: personal development, career education, and study skills. Emphasizes the special needs of the re-entry woman. Provides education and support for the individual. Lecture 1-2 hours per week.

**STD 106 PREPARATION FOR EMPLOYMENT (1-2 CR.)** Provides experience in writing resumes, preparation of applications, letters of application, and successfully preparing for and completing the job interview. Assists students in identifying their marketable skills and aptitudes. Develops strategies for successful employment search. Assists students in understanding effective human relations techniques and communication skills in job search. Lecture 1-2 hours per week.

**STD 107 CAREER EDUCATION (2 CR.)** Surveys career options available to students. Stresses career development and assists in the understanding of self in the world of work. Assists students in applying decision making to career choice. May be substituted for STD 100. Lecture 2 hours per week.

**STD 108 COLLEGE SURVIVAL SKILLS (2 CR.)** Provides an orientation to the college. Introduces study skills, career and life planning. Offers an opportunity to engage in activities aimed at self-discovery. Emphasizes development of "coping skills" such as listening, interpersonal relations, competence, and improved self-concept. Recommended for students enrolled in developmental courses. May be substituted for STD 100. Lecture 2 hours per week.

## **WELDING (WEL)**

**WEL 120 FUNDAMENTALS OF WELDING (2 CR.)** Introduces history of welding processes. Covers types of equipment and assembly of units. Stresses welding procedures such as fusion, non-fusion, and cutting oxyacetylene. Introduces arc welding. Emphasizes procedures in the use of tools and equipment. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

**WEL 121 ARC WELDING (2 CR.)** Prerequisite: WEL 120 or departmental approval. Studies the operation of AC and DC power sources, weld heat, polarities, and electrodes for use in joining various alloys by the SMAW process. Covers welds in different types of joints and different welding positions. Emphasizes safety procedures. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

**WEL 135 INERT GAS WELDING (2 CR.)** Prerequisite: WEL 120 or departmental approval. Introduces practical operations in use of inert gas shielded arc welding. Studies equipment operation, setup, safety, and practice of GMAW (MIG) and GTAW (TIG). Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

**WEL 145 WELDING METALLURGY (3 CR.)** Prerequisite: WEL 120 or departmental approval. Studies steel classifications, heat treatment procedures, properties of ferrous and non-ferrous metals. Discusses techniques and practices of testing welded joints and destructive/nondestructive, visual magnetic, and fluorescent testing. Lecture 3 hours per week.

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 John R. Patterson, Botetourt County  
 William R. Reid, Roanoke City  
 A. Byron Smith, Roanoke City

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B.A.—The George Washington University, 1958;  
 M.A.—Florida State University, 1965;  
 Ph.D.—University of Georgia, 1969

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A.A.—Reinhardt Junior College, 1959;  
 A.B.—Mercer University, 1961;  
 M.A.—George Peabody College, 1965;  
 Ph.D.—George Peabody College, 1972

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 B.S.—Virginia Polytechnic Institute & State University, 1974;  
 M.S.—Virginia Polytechnic Institute & State University, 1978

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B.S.—Virginia Commonwealth University, 1965;  
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A.S.—Virginia Western Community College, 1969;  
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A.B.—Franklin & Marshall College, 1965;  
 M.A.—The Pennsylvania State University, 1967;  
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**INDEX**

Academic Advising .....	30
Academic Calendar .....	2
Academic Dismissal .....	30
Academic Honors .....	29
Academic Load .....	27
Academic Probation .....	29
Academic Regulations .....	27
Academic Standing .....	29
Academic Support Services .....	22
Academic Warning .....	29
Accounting .....	37
Accreditation .....	1
Administration of Justice .....	38
Administration of Justice Course Descriptions .....	122
Administration of Justice Lay Advisory Committee .....	156
Administrative Faculty .....	150
Admission of International Students .....	15
Admission of Senior Citizens .....	15
Admission Priorities .....	14
Admissions Eligibility .....	13
Admissions Information .....	13
Admissions Policy .....	13
Advanced Placement and Credit-by-Exam Examination .....	15
Air Conditioning and Refrigeration .....	41
Air Conditioning and Refrigeration Course Descriptions .....	123
Application Procedure .....	13
Approved List of Transfer Electives .....	36
Architectural/Civil Technology Lay Advisory Committee .....	156
Architectural Course Descriptions .....	123
Architectural Drafting .....	43
Architectural Technology .....	45
Art Course Descriptions .....	124
Attendance .....	28
Aviation Course Descriptions .....	125
Biology Course Descriptions .....	125
Books and Materials .....	18
Broadcasting Course Descriptions .....	125
Broadcasting - See Radio/Television .....	106
Business Administration .....	46
Business Industrial Supervision .....	48
Business Industrial Supervision Lay Advisory Committee .....	156
Business Management and Administration Course Descriptions .....	126
Business Technology Lay Advisory Committee .....	156
Campus Clubs and Organizations .....	23
Career Services/Job Referral .....	22
Channels of Communication for Academic Complaints .....	24
Chemistry Course Descriptions .....	127
Child Care .....	48
C.B.I.T. ....	11
Civil Engineering Technology .....	50
Civil Technology Course Descriptions .....	127
Civil Technology/Surveying .....	51
Classification of Students .....	16
Clerical Studies .....	52
College Assistance Program Opportunity Grant-CSAP .....	19
College Facilities .....	10
College year for Graduation .....	30
Commercial Art .....	53
Commercial Art Course Descriptions .....	124
Commercial Art Lay Advisory Committee .....	156
Computer Information Systems .....	54
Computer Information Systems Course Descriptions .....	127
Computer Literacy .....	33
Computer Science Course Descriptions .....	128
Continuing Education Lay Advisory Committee .....	156
Counseling Services .....	22
Course Descriptions .....	121
Credits .....	27
Degrees and Certificates .....	31
Dental Hygiene .....	56
Dental Hygiene Course Descriptions .....	128
Dental Hygiene Lay Advisory Committee .....	156
Description of Courses .....	121
Drafting Course Descriptions .....	129
Dual Enrollment for High School Students .....	16
Early Childhood Development .....	60
Early Childhood Development Course Descriptions .....	130
Early Childhood Development Lay Advisory Committee .....	157
Economics Course Descriptions .....	130
Education .....	62
Education Secretary .....	64
Educational Program Goals .....	9
Electrical/Electronics Engineering Technology .....	64
Electrical/Mechanical Engineering Technology .....	92
Electrical Wiring .....	67
Electronic Servicing .....	68
Electronics Technology Course Descriptions .....	131
Eligibility for Financial Aid .....	19
Emergency Medical Technology Course Descriptions .....	132
Engineering .....	69
Engineering Course Descriptions .....	132
English As A Second Language Course Descriptions .....	133
English Course Descriptions .....	133
Environmental Science and Technology .....	71
Environmental Science and Technology Course Descriptions .....	134
Expenses .....	18
Faculty .....	151
Fees and Charges .....	18
Final Examinations .....	28
Financial Services Course Description .....	134
Fire Science Course Descriptions .....	134
Fire Science Lay Advisory Committee .....	157
Firefighting and Prevention .....	72
Floral Design and Indoor Plant Care .....	79
French Course Descriptions .....	135
General Education .....	33
General Information .....	9
General Studies .....	73
Geography Course Descriptions .....	135
Geology Course Descriptions .....	135
German Course Descriptions .....	135
Grade Point Average .....	28



Grade Reports .....	28	Parking on Campus .....	25
Grading System .....	27	Participation in Commencement .....	32
Graduation Requirements .....	32	Pell Grant .....	19
Health Course Descriptions .....	135	Philosophy Course Descriptions .....	143
Health Services for Students .....	23	Photography Course Descriptions .....	143
High School Transcripts .....	28	Physical Education and Recreation Course Descriptions .....	144
History Course Descriptions .....	136	Physics Course Descriptions .....	144
Honor Society .....	29	Plant Propagation and Production .....	80
Horticulture Technology .....	76	Policies and Procedures Relating to Sexual Misconduct .....	24
Horticulture Technology Course Descriptions .....	136	Policy on Firearms .....	25
Horticulture Technology Lay Advisory Committee .....	157	Policy on Substance Abuse .....	25
How and When to Apply for Financial Aid .....	19	Political Science Course Descriptions .....	144
Humanities Course Descriptions .....	137	Private Scholarships .....	20
Industrial Technology .....	81	Program Competencies .....	34
Industrial Technology Course Descriptions .....	137	Programs of Study and Graduation Requirements .....	31
Interior Design Course Description .....	137	Psychology Course Descriptions .....	144
Landscaping and Outdoor Plant Care .....	79	Radio and Television Production .....	106
Lay Advisory Committees .....	156	Radio/Television Course Descriptions .....	145
Learning Center .....	23	Radio/Television Production Technology Lay Advisory .....	158
Legal Administration Course Descriptions .....	138	Radiography .....	107
Legal Assistant .....	82	Radiography Course Descriptions .....	145
Legal Assistant Lay Advisory Committee .....	157	Radiography Lay Advisory Committee .....	159
Legal Assisting .....	83	Railroad Operations .....	110
Liberal Arts .....	84	Railroad Operations Course Descriptions .....	146
Liberal Arts: Fine Arts .....	86	Real Estate .....	112
Library .....	23	Real Estate Course Descriptions .....	146
List of Programs .....	31	Release of Directory Information .....	17
Machine Technology Course Descriptions .....	139	Religion Course Descriptions .....	146
Management .....	87	Repeating a Course .....	28
Marketing Course Descriptions .....	139	Resident Requirements .....	14
Mathematics Course Descriptions .....	139	Rules for Bookstore Refunds .....	18
Mechanical Engineering Course Descriptions .....	141	Safety Course Descriptions .....	146
Mechanical Engineering Technology .....	92	Science .....	113
Medical Transcriptionist .....	93	Science: Health Sciences .....	115
Medical Transcriptionist Course Descriptions .....	136	Services for Persons with Disabilities .....	22
Medical Transcriptionist Lay Advisory Committee .....	158	Sign Communications Course Descriptions .....	147
Mental Health .....	94	Sociology Course Descriptions .....	147
Mental Health Technology Course Descriptions .....	141	Spanish Course Descriptions .....	148
Mental Health Technology Lay Advisory Committee .....	158	Speech and Drama Course Descriptions .....	148
Microcomputer Studies .....	97	Stafford Loan Program .....	21
Military Credit .....	16	State and Local Boards .....	149
Minimum Requirements for Associate Degree .....	35	Student Activities Program .....	22
Mission Statement .....	9	Student Development Course Descriptions .....	148
Music Course Descriptions .....	142	Student Financial Aid .....	19
Natural Science Course Descriptions .....	142	Student Government Association .....	22
Nurse Aide .....	101	Student Health Services .....	23
Nurse Aide Lay Advisory Committee .....	158	Student Permanent Record .....	16
Nursing .....	97	Student Publications .....	23
Nursing Course Descriptions .....	142	Student Support Services Program .....	22
Nursing Lay Advisory Committee .....	158	Students Transferring from Other Colleges .....	15
Nursing Scholarship .....	20	Suggestions, Appeals, and Grievances .....	24
Occupational Safety .....	102	Suspension for Lack of Progress .....	30
Occupational Safety Lay Advisory Committee .....	158	Suspension for Nonpayment .....	18
Off-campus Housing .....	23	TDD number .....	163
Office Systems Technology .....	103	Transcripts from Other Colleges .....	29
Outcomes Assessment Requirement .....	32	Transfer Module .....	30
		Tuition .....	18
		Tuition Refunds .....	18
		Tutorial Assistance .....	22
		Types of Financial Aid .....	19

VCCS Grant.....	19	Welding.....	118
Veterans Affairs .....	21	Welding Course Descriptions .....	148
Virginia National Guard Tuition Assistance Program.....	21	Word Processing .....	119
Virginia Public Service Orphans Education Program.....	21	X-ray Technology-see Radiography.....	107
VWCC Academic Scholarship .....	20		

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Campus Police:	857-7797
Career Services/Job Referral:	857-7298
Continuing Education Center:	857-7281
Counseling:	857-7237
Dental Clinic:	857-7221
Engineering Division:	857-7275
Financial Aid:	857-7331
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Student Support Services:	857-7286
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